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INDIAN CUTLERY TO OVERSEAS MARKETS

Export trade in cutlery fetched for India Rs. 5.72 million during 1972-73 as compared to Rs. 4.34 million in the preceding year. Knives, blades, razor-blades, scissors and their blades, spoons, forks and similar tableware, as well as cutlery handles made of base metal are among the products that fared well on the export stream. Tableware which contributed Rs. 2.75 million in the year was mainly supplied to U.S.A., U.K., Bulgaria, Sweden, Nigeria, U.S.S.R., Canada and Poland. The U.K. and U.S. markets imported worth Rs. 0.8 million and Rs. 0.7 million respectively. Export trade in razor blades which was mainly directed to Sudan and Poland totalled Rs. 1.3 million. Scissors and their blades secured Rs. 0.7 million and these were supplied principally to Ethiopia.

M/s. Kishco Cutlery Manufacturing Company, Empire Building, D. Naoroji Road, Bombay, has a record of growing export performance in the field. Starting with a modest Rs. 150,000 a year, their export earning totalled Rs. 2.6 million in 1972-73. The company is hopeful of crossing the Rs. 5 million mark a year soon.

The firm has begun export of silver cutlery and tableware to the U.S., the U.K. and Netherlands and is soon to enter the field of brewery, glassware and hotel industries. Presently, it produces 30,000 pieces a day from its first manufacturing unit which was established in 1965. The second unit with an additional capacity of 70,000 pieces a day was recently inaugurated. The second unit is to manufacture goods solely for exports under customs bond.

Their new patterns 'Parma' and 'Temptation' have bagged a record order of one million pieces each from the U.K. and U.S.A. markets alone. Among others, the firm's culterly is supplied to U.K., Canada, U.S.A., Denmark, West Indies, Central America, Kuwait, Dubai, Bahrein, Malawi, East Africa and West Africa. During 1972-73, it exported nearly Rs. 1.1 million worth to the U.S.A., Rs. 0.8 million to the U.K. and Rs. 0.3 million to Canada.

Aside from competing in the international market by offering quality cutlery at competitive prices, the company also helped in import substitution for supplying the cutlery requirements at home, particularly to 5-star hotels and national airlines. M/s. Kishco has won the Engineering Export Promotion Council's certificate of merit for outstanding export performance for stainless steel cutlery exports for three years in succession—for 1969-70, 1970-71 and 1971-72. It has also secured the export shield for 1971-72 from the Council.

The company has technical know-how from M/s. Seke Cutlery Manufacturing Company of Japan and has acquired the latest high speed machinery from that country.

The cutlery company has plans to construct a third unit which will manufacture besides cutlery, hollow-ware comparable to international standards and design. They have plans to produce a superior range of hotel-ware and surgical instruments, precision—made to stringent specifications. Simultaneously with the construction of their third cutlery unit, they will go in for brewery with a sizeable capacity. They also plan to enter glassware field.

AUTOMOBILES EARN MORE FOREIGN EXCHANGE

M/s. Mahindra and Mahindra, Appolo Bunder, Bombay, one of the leading manufacturers of automobiles and ancillaries succeeded in exporting worth Rs. 15.60 million during 1972-73. Taking into consideration their increased export turnover in the preceding few years, they have been lately granted recognition as a manufacturing Export House by the Government of India. The firm's export list covers a well diversified range of markets, particularly in West Asia, Africa and East Europe.

Jeeps manufactured by them are quite popular in a large number of countries. The annual quantum of their export in the line was of the order of 400 to 500 numbers before 1969-70 during which year they exported 2000 jeeps. During 1972-73, they supplied abroad over 1000 jeeps mainly to Yugoslavia, Sri Lanka, Jordan and Nigeria. Indonesia is also among their significant customers for vehicles in breakdown condition. Besides jeeps, they are one of the leading exporters of steel in India. Their range of manufacture includes machine tools also.

India's automobile industry has come of age. Along with the growing production of a variety of automobiles and accessories, the industry has achieved notable strides in the export field also. During 1972-73, the industry secured foreign exchange to the tune of Rs. 160 million as compared to Rs. 149 million in 1971-72.

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The range of export of the industry includes trucks, uses, lorries, motor cars, jeeps, motor cycles, scooters, ractors, breakdown lorries and a complete range of ccessories and parts. Bangladesh, Nepal, Arab Republic of Egypt, Yugoslavia, Sri Lanka, Nigeria, Saudi Arabia, Kuwait, Iran, Singapore, Sudan and Tanzania Republic are the significant markets.

During 1972, in the organised sector, the production of the industry in various types of automobiles was : commercial vehicles 37,460 numbers; cars 40,040 numbers; motor cycles 47,560 numbers; mopeds and scooterettes 21,610 numbers; three-wheelers 9,790 numbers and scooters 64,330 numbers.

CINE PROJECTORS ON EXPORT STREAM

India's overseas supplies of cine projectors, parts and accessories secured foreign exchange at a value of over Rs. 0.71 million during 1972-73 as against Rs. 0.75 million in 1971-72.

Of the total export realisation during 1972-73, cine projectors earned over Rs. 0.40 million while parts and accessories secured Rs. 0.30 million. U.S.A. with purchases valued at Rs. 0.28 million was the leading customer for cine projectors. Indonesia, Belgium, Canada and Kuwait were among other buyers.

Parts and accessories were imported by about a dozen and a half countries during the year, among which Afghanistan and Bangladesh were significant.

M/s. Cinesales Corporation, New Delhi, one of the dealers in cine equipment and accessories have recently secured a contract valued at Rs. 1 million from Algeria for the supply of cinema projectors. The Corporation bagged this contract as a result of participation by the Delhi Small Industries Development Corporation in the Algiers International Trade Fair, held in that country during September this year.

Apart from cine projectors, parts and accessories, India's cine equipment industry exports photo and cine apparatus and equipment and photographic and cinematographic items. Surinam, Thailand, U.S.A., Bangladesh, Sri Lanka, and Tanzania Republic are the prominent markets.

INDIAN LOCKS TO CZECHOSLOVAKIA

From Rs. 5.40 million worth in 1971-72, India's overseas supplies of locks, padlocks and keys improved marginally to earn Rs. 5.86 million in the following year.

Of the total earning during 1972-73, padlocks earned Rs. 3.15 million as against Rs. 1.31 million in 1971-72. German Democratic Republic was the leading buyer which bought at a value of Rs. 1.23 million as compared to Rs. 0.83 million in 1971-72. Among other buying countries, Poland, Czechoslovakia, Federal Republic of Germany and U.S.A. were prominent.

The export value of locks and keys which brought in Rs. 2.72 million during 1972-73, however, earned less as compared to their value at Rs. 4.10 million in 1971-72. Bulgaria, Yugoslavia, Hungary, Poland, German Democratic Republic and Federal Republic of Germany were the prominent customers.

Adding to the export endeavour of locks and padlocks, M/s. Indian Implements Mfg. Co., Marris Road, Aligarh, one of the leading manufacturers and exporters of locks in the country, have recently secured a sizeable contract from M/s. Merkuria Foreign Trade Corporation of Czechoslovakia for the supply of locks at a value of Rs. 3 million. Inclusive of this contract, the firm's total export turnover, so far, exceeded the Rs. 15 million mark.

The export range in the manufactures of metals includes broadly finished structural parts and structures;

metal containers for storage and transport; wire products and fencing grills; nails, screws, nuts, bolts, rivets and similar articles of iron, steel or of copper; tools for use in hand or in machines; cutlery; household equipment of base metals and other manufactures of metals. Iran, U. S. A., Libya, Thailand, Kuwait, Kenya, Yemen Arab Republic, U.S.S.R., Yugoslavia, Czechoslovakia, Poland, U.K., Federal Republic of Germany and Netherlands are the significant buyers.

EXPORT PERFORMANCE AND POTENTIAL

TRADE WITH CARIBBEAN COUNTRIES

During the year 1972-73, India's exports to the Caribbean countries have been of the order of Rs. 22 million as against Rs. 28 million in 1971-72. Imports into India from these countries were to the tune of Rs. 2 million in 1972-73 as compared to about Rs. 9 million in 1971-72.

Major exports were to Trinidad and Tobago (Rs. 6 million), Guyana (Rs. 3.8 million), Windward Island (Rs. 3.6 million), Netherland Antillis (Rs. 2.4 million), Jamaica (Rs. 1.6 million) and Surinam (Rs. 0.7 million). India's exports to Bermuda, Bahamas, French West Indies and Virgin Islands of the United States were of little significance. The exports to other countries in this region - Soma, Guyana (French), Honduras (non-British) and Leeward Islands were negligible in the same year.

The main items of export from India to these countries have been footwear, cotton and silk fabrics, jute manufactures, electrical machinery, apparatus and appliances, coir mats and matting, developed cinematographic films, oilseeds, oilnuts and oil kernels, works of art, collectors' pieces and antiques, jewellery and goldsmith's and silversmith's ware, metal manufactures and musical instruments.

The principal items of import into India from these countries have been pearls, precious and semi-precious stones (unworked or worked), petroleum products and alcoholic beverages.

A Trade Delegation from India that has visited these countries has come to the conclusion that Caribbean countries constitute a large untapped market. There are several fields where India can have a chance of effecting substantial exports. The areas identified by the delegation were bulk handling and mining equipment, cotton textile machinery, sugar mill machinery, power distribution equipment like transmission line towers and metres, sewerages and water supply material and consultancy services, central air conditioning, refrigeration and chilling equipment including compressors and designing of various industrial projects and fertilizer plants. There are also vast possibilities of setting up small scale industrial units in these countries jointly with local entrepreneurs.

TRENDS IN SILK EXPORTS

Exports of Indian silk goods during January–November, 1973 aggregated Rs. 103.5 million as against Rs. 67.8 million in the same period of the preceding year, recording an increase of 53 per cent.

The growth in exports is due to the steady increase in the demand for all varieties of handloom silk goods. In particular, the demand for dress-materials has gone up as their foreign exchange earnings in the period amounted to Rs. 33 million as against Rs. 20 million in the corresponding period of 1972.

The share of mulberry silk products was as much as Rs. 85.6 million (4.5 million sq. metres) in the exports during the period reviewed in 1973 as compared to Rs. 55.6 million (3.5 million sq. metres) in the same period of 1972.

The Federal Republic of Germany continued to be the leading buyer followed by France, U.S.A., Japan, Malaysia, Singapore, U. K. and Italy.

Among the varieties exported, dress materials have earned the major portion of foreign exchange. The exports of scarves have also improved. Sarees, ready-made garments and ties have registered a sizeable increase too.

Indian silk and silk goods have been in good demand overseas. Their exports accounted for Rs. 83 million in 1972-73 as compared to Rs. 71.20 million in 1971-72.

Indian silks have created a niche of their own in the overseas markets and are likely to gather further momentum.

EXPORT PERFORMANCE OF PLASTICS AND LINOLEUMS

India's export trade in plastics and linoleums improved from Rs. 63 million in 1971-72 to over Rs. 84 million in the subsequent year (1972-73). The trend in export step-up has continued in the subsequent year too as is evident from the fact that the export earnings totalled Rs. 44.4 million in the first half of 1973-74 (April-September 1973) as compared to Rs. 28.9 million in the same period of 1972-73.

Several plastic items have revealed export improvement in the first half of 1973-74. In the plastics group, export trade in spectacle frames has more than trebled to the level of Rs. 6.5 million in the first half of 1973-74 as compared to Rs. 1.8 million in the preceding period. Plastic imitation jewellery constituted another growth point—Rs. 5.74 million against Rs. 1.7 million. Plastic moulded and extruded goods as well as PVC gramophone records and accessories secured Rs. 8.3 million as against Rs. 5.3 million. Export performance of fountain pens, and ballpoint pens also witnessed growth from Rs. 1.3 million to Rs. 4.2 million. Among other categories whose exports have recorded sizeable rise were plastic electrical accessories, PVC pipes and conduits, polyethylene film sheets and bags, metallised plastic products and plastic brushes. The group of linoleums has, however, registered decline to Rs. 5.75 million as compared to Rs. 7.40 million in the export performance.

The increase in the export earnings of plastics and linoleums in the first half of 1973-74 would have been higher but for the shortfalls in the performance of categories like PVC leather cloth, PVC sheets, bangles and polylined jute apart from linoleums. The declining trend in the export trade of these items was mainly due to the non-availability of raw materials which proved to be a detriment as much at home as abroad.

Major importers of Indian plastics and linoleums include U.S.S.R., Hong Kong, Dubai, Czechoslovakia, Nigeria, U. K., Singapore, German Democratic Republic, Kuwait and Sudan.

The Plastics and Linoleums Export Promotion Council have placed a target of Rs. 120 million for the export trade in the line for the entire period of 1973-74. In fact, the Council expects that the export trade will reach Rs. 260 million in 1975 by which year world trade in plastics would be in the neighbourhood of Rs. 5,730 million. Thus, India's share in the world trade for the product is expected to improve to 4.5 per cent in 1975 as against 0.87 per cent in 1969.

SPICES EXPORTS UP

India's export trade in spices have shown an upward trend, during the first half of 1973-74 (April-September, 1973). The export was of the order of Rs. 187 million as against Rs. 115 million in the corresponding period in 1972-73. The rise was 12 per cent in quantity and over 60 per cent in terms of earnings; the disproportionate increase in earnings being due to increase in unit value. Total exports during 1972-73 were valued at Rs. 291 million.

Exports of pepper during April-September, 1973 were of the order of Rs. 93 million against Rs. 53.5 million during the corresponding period of the preceding year. Cardamom has also shown increase, both in terms of quantity and value. During the period under review of the respective years, the value increased to

Rs. 44 million from Rs. 25 million. Other spices which registered a rise in exports during April-September, 1973 were turmeric, corriender, cumin seed, fennel seed, celery seed and tejpat.

The principal buyers of Indian spices were U.S.S.R., U.S.A., Yugoslavia, Singapore, Fiji Islands, German Democratic Republic and Federal Republic of Germany.

PAPER EXPORTS RESTRICTED

The Government of India have restricted the export of writing and printing paper effective from November 30, 1973. The exports of this item will normally not be allowed excepting where irrevocable letters of credit have been opened by foreign buyers and accepted by Indian banks prior to that date.

India's total exports of paper, paper-board and manufactures were in the neighbourhood of Rs. 42 million in 1972-73 and over Rs. 29 million in 1971-72. Of this, printing and writing paper in rolls and sheets was as much as Rs. 5.7 million in 1972-73.

The other varieties of paper exported are kraft paper and kraft paper-board, cigarette paper, tissue paper, packing and wrapping paper, multiplex paper board and wood pulp board, fibre boards and other building boards of wood pulp and vegetable fibre. There are also other varieties of paper manufactures exported including paper-board boxes and other packing containers, envelopes, letter-pads and other stationery for correspondence, exercise books, registers, albums and carbon papers and so on.

EXPORT POSITION OF RUBBER

India's export trade in natural rubber and similar natural gums, synthetic rubber and reclaimed rubber grew from 269,810 kgs. (Rs. 3,78,000) in 1970-71 to 693,980 kgs. (Rs. 906,000) in 1971-72 and 10,81,400 kgs. (Rs. 1.50 million) in 1972-73.

The State Trading Corporation of India has been directed by the Government of India to export natural rubber to the extent of 5,000 tonnes during 1973-74. The Corporation has already succeeded in exporting 1,445 tonnes upto mid-December this year.

With a view to promote the interests of small growers of rubber, the Rubber Board in the country is operating several schemes, such as, replanting subsidy schemes for increasing productivity, expanding the existing holdings to economic units, distribution of high-yielding planting materials, distribution of fertilizers and fungicides at concessional rate, free technical advice to growers and granting financial assistance to cooperative societies of small growers for improving processing and marketing.

From the licensing period 1973-74, import of natural rubber into India has been totally banned.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PLANNED INDUSTRIAL PROGRESS—RETROSPECT AND PROSPECT

India's Fifth Five-Year Plan Draft envisages an annual growth rate of 8.1 per cent in the industrial and mineral sectors. The Plan lays emphasis on the rapid development of the core sector industries, which contribute to significant import savings and thereby lend strength to the economy and thus attaches high priority to expansion in manufacturing areas like steel, non-ferrous metals, fertilisers, mineral oils, coal and machine building.

The industrial programmes envisaged in the plan aim at creating surplus capacities for exports and adequate supply of mass consumption goods. The production growth of non-essential goods except as required for exports will be severely curbed in the plan period. The industrial programmes are so conceived as to achieve the other socio-economic objectives of diffusion of ownership, maximisation of employment, dispersed growth of industries and improvement in scientific and technological capabilities. These objectives are sought to be achieved by encouraging village and small scale industries, developing industrially backward areas and improving the application of science and technology to industrial development.

When the Fourth Five-Year Plan was formulated, the Indian economy was recovering from a period of recession and there was considerable under-utilisation of capacity in the industrial sector, particularly in the capital goods and engineering industries. The major emphasis, therefore, was on reversing the trend in the earlier years and on accelerating industrial growth. In furtherence of these objectives, the Fourth Plan provided for an investment on industrial and mineral programmes amounting to Rs. 30,500 million in the public sector and Rs. 22,500 million in the private and corporate sectors. The bulk of the public sector investment was proposed for industries like steel, non-ferrous metals, fertilisers, petrochemicals, petroleum and iron ore development. In other industries, inclusive of cement, power, sugar, industrial machinery and light engineering, substantial contribution was expected of the private sector. The growth rate of industrial production declined from 6.8 per cent in 1969-70 to 3.7 per cent in 1970-71, but increased to 4.5 per cent in 1971-72 and is estimated at about 5 per cent in the subsequent years. A number of factors have contributed to the fall in the growth rate in industrial production during the Fourth Plan. Production lagged behind in certain industries on account of inadequate capacity while in certain other industries factors resulted in lower production inspite of adequate capacity. In some of the critical industries like steel and fertilisers, production remained stagnant mainly owing to operational problems due to lack of maintenance or design deficiencies. In agro-industries like sugar and textiles, the output showed an erratic trend depending on the production of related agricultural crops. It is against this background that the strategy of industrial development in the Fifth Five-Year Plan is being designed.

The Fifth Plan envisages a total outlay of Rs. 135,280 million in the organised industry and mining sector. Of this, the public sector outlay would be Rs. 83,280 million which works out to about 62 per cent of the total outlay. The outlay envisaged in the public sector projects organised by the Central Government (Rs. 78,290 million) is mainly to be in steel, fertilisers, coal, oil refining and distribution, oil exploration, machinery and engineering industries, non-ferrous metals, petrochemicals, iron ore, paper and newsprint, cement, textiles, shipbuilding, electronics and other basic industries. In the private and corporate sector, a significant proportion of capacity and production expansion is envisaged in industries like cement, sugar, paper, textiles, industrial machinery, transport equipment, light engineering industries, chemicals. drugs and pharmaceuticals, rubber goods, glass and ceramics.

The sector-wise analysis of industrial programmes envisaged in the Fifth Plan will make an interesting study. In respect of *iron and steel*, for instance, the domestic demand for finished and mild steel is estimated at about 10 million tonnes by 1978-79. Against this, the production expected from the integrated steel plants in the country is placed at 8.8 million tonnes by that year. The total production of saleable steel is expected to be 9.4 million tonnes as against an estimated 5.44 million tonnes in 1973-74. The major programmes in regard to mild steel relate to expansion of Bhilai to 4 million tonnes, expansion of Bokaro to 4.75 million tonnes and significant progress in the implementation of the Visakhapatnam and Vijaynagar steel projects. As regards the alloy and special steels, the programme envisages the setting up of Salem steel project to manufacture certain categories of special steels, fuller utilisation and expansion of the Durgapur alloy steel plant and maximization of production in the Mysore Iron and Steel Limited. The overall utilisation of capacity by the integrated steel plants during 1973-74 is expected to be about 75 per cent. The projected level of production by the end of the Fifth Five-Year Plan is based on substantial improvement in the utilisation of capacity of the existing steel plants. The utilisation of existing capacity is expected to be stepped to about 90 per cent. The capacity for mild steel is proposed to be stepped up to 11.7 million tonnes of saleable steel and of alloy and special steel to nearly 1 million tonnes by 1978-79.

Higher priority is also attached to the development of *non-ferrous metals*, particularly in the production of copper, lead, zinc and aluminium. While in the short term there is need to increase the tempo of exploitation of the deposits where mineral reserves have been established, it would be equally important to promote exploratory efforts so as to increase the known limited resources of ores. Production of aluminium is estimated at 370,000 tonnes by 1978-79 as against 190,000 tonnes anticipated in 1973-74. Additional production during the plan will be achieved primarily through the completion of the public sector Korba plant which will contribute to a production of 100,000 tonnes per year. The plan also makes provision for sizeable investments on the Ratnagiri project which will yield additional production of 50,000 tonnes per year.

In the early years of the Fifth Plan, the major programmes of copper production relate to the utilisation of smelter capacities at Khetri in Rajasthan and Ghatsila in Bihar. Together, these smelters which will have a capacity of 57,000 tonnes per year are expected to contribute at least 45,000 tonnes of copper by 1978-79; (in 1973-74 the production is likely to be 18,000 tonnes). Another important copper programme would be the exploitation of the Malanjkhand ore deposits which are amenable to open cast mining and are expected to sustain a production of 30,000 tonnes per year. As for nickel, it is proposed to increase its output from 28,000 tonnes in 1973-74 to 100,000 tonnes by 1978-79. In the public sector projects, the major programmes consist of the expansion of the Debri smelter to 45,000 tonnes and the establishment of new smelter in Andhra Pradesh and Rajasthan having total capacity of 80,000 tonnes per year. In addition, the zinc smelter at Alwaye in Kerala in the private sector is to be expanded to a capacity of 40,000 tonnes per year. The total capacity for the production of zinc at the end of the Fifth Plan is thus estimated at 165,000 tonnes.

Lead production in the country is presently confined to a public sector smelter with a capacity of 6,000 tonnes. The plan envisages lead production to grow to 20,000 tonnes by 1978-79 from 3,000 tonnes in 1973-74. The first major project for the production of nickel will be at 4,800 tonnes of nickel and 200 tonnes of cobalt every year. This project is expected to be commissioned by the end of the Fifth Five-Year Plan.

In the *engineering industries* sector, imports of machinery, components and spares constitute the single largest group of imports, amounting to about 25 per cent of the country's total import bill. The creation of technological and physical capabilities for increasing capital goods production is thus an important element in the drive towards self-reliance. With the various steps to be undertaken in the plan period, the value of output of engineering industries is to improve from an estimated level of Rs. 27,000 million in 1973-74 to Rs. 52,000 million in 1978-79. Apart from significant import savings, production in private sector is expected to enable an increase in the export of engineering goods to an estimated Rs. 4,000 million in 1978-79. A substantial proportion of the additional exports would be in the form of project exports, engineering services being provided along with the equipment supplied.

There has been a rapid rise in the production of *heavy electrical equipment* in the public sector projects of Bharat Heavy Electricals Limited and Heavy Electricals (India) Limited, from Rs. 1,030 million in 1971-72 to Rs. 2,180 million in 1973-74. The output from these units is envisaged to be further increased in the Fifth Plan period reaching noted capacity production at Bhopal, Ranipur and Hyderabad units by 1975-76. The production of thermal generating sets is expected to be raised to 2.2 million kw (against 1.7 million kw in 1973-74) and hydro sets to 1.4 million kw (against 6.53 million kw in 1973-74) by 1978-79. The sizes of thermal generating sets to be manufactured by the units of the above two public sector projects have been standardized at 110 MW, 120 MW and 200 MW. It is proposed to set up a foundry forge facility at Ranipur to meet the critical requirements of castings and forgings for the production of generating sets. Matching capacity for power boiler has also been projected through the expansion of Tiruchi Unit of BHEL as also of a private sector unit. With increased domestic production, requirements of generating sets in the Fifth Plan would be sizeably met from domestic sources. The programmes in the public sector also include expanision in traction motors, power transformers and switchgears and controlgears.

Long-term requirement of *heavy metallurgical equipment* has been estimated at 90,000 tonnes per year. The programmes for the Fifth Plan contemplate in addition to the utilisation of fuller rated capacity of the heavy machine building plant at Ranchi, the establishment of a new unit with a capacity of 20,000 tonnes per year for the production of rolling mills. Along with the supplementary capacity that exists in units like the Mining and Allied Machinery Corporation (MAMC), certain units in the private sector which manufacture technological structurals and single types of equipment will enable the capacity of the steel industry to be stepped up at the rate of 12 million tonnes per year, largely based on domestic equipment. In all, the production of metallurgical and other heavy equipment is expected to rise to 75,000 tonnes in 1978-79 as against estimated 30,000 tonnes in 1973-74.

In the *chemical equipment* field, the facilities available at Bharat Heavy Plates and Vessels, Visakhapatnam, have made an important contribution. The Fifth Plan provides for further expansion of this project as well as of M/s. Triveni Structural Engineering Works. In addition, expansion of existing smaller units in private sector is also envisaged. A total capacity of 45,000 tonnes per year for heavy fabricated equipment is expected to be achieved by the end of the Fifth Five-Year Plan. With the establishment of manufacturing facilities at Bharat Pumps and Compressors Limited, Naini and at Bharat Heavy Electricals Limited, Hyderabad, a major gap in the field of chemical plant and equipment relating to heavy duty pumps and compressors is sought to be substantially met.

Inspite of rapid progress in the development of machine tool capacity, there is still a large import of sophisticated range of *machine tools*. The programme of diversification of Hindustan Machine Tools in the Fifth Plan includes the production of specialised machine tools covering N.C. adaptations. The range of production in the private sector is also sought to be broadened. The output of machine tools of all types is expected to increase to the value of Rs. 1,370 million by 1978-79 as compared to an estimated Rs. 650 million in 1973-74.

The requirements of *agricultural tractors* are expected to be in the neighbourhood of 80,000 numbers by 1978-79. The Hindustan Machine Tools factory at Pinjore, which envisages an output of 12,000 tractors, has already gone into production and is to progressively increase its output in the range of 20 to 60 horse power. Additionally, a number of new units and the expansion of existing undertakings have been approved. With the implementation of these schemes, the demand for tractors is to be fully met from domestic production by the end of the plan period. The output estimated for 1973-74 is 40,000 numbers. The demand for *power tillers* has been placed at 25,000 numbers by 1978-79. The state industrial development corporations / agro-industrial corporations have programmed for undertaking the production of power tillers in addition to the schemes approved in the private sector. The Fifth Plan production target for the item is 25,000 numbers against 2,000 numbers estimated in 1973-74.

In the area of transport equipment, the production of *commercial vehicles* is estimated to be raised to 110,000 in 1978-79 inclusive of 25,000 to 30,000 numbers of buses and double deckers (as against 48,000 numbers in 1973-74). The vehicle factory at Jabalpur is to achieve a production level of around 25,000 by 1978-79. As regards passenger cars, a modest increase in production to 60,000 numbers per year is envisaged by the end of the plan period, as compared to 42,000 numbers estimated in 1973-74. Production of scooters, motor-cycles and mopeds is proposed to be stepped up substantially from 184,000 numbers in 1973-74 to 570,000 numbers in 1978-79. The Central public sector unit, M/s. Scooters India Limited will have a capacity of 120,000 numbers. Auto ancillaries which contributed a major portion of engineering exports are envisaged to grow in their output from a level of Rs. 1,700 million in 1973-74 to Rs. 7,400 million in 1978-79.

The major gaps in *industrial machinery* are in the field of paper and pulp machinery, rubber machinery, lamps making machinery and printing machinery. In addition, expansion will also be required in the plan period for cement machinery, sugar machinery and cotton machinery to meet the rising domestic and export requirements. The public sector programmes in the industrial machinery sector include development of capacity for printing machinery, lamp making machinery and paper and pulp machinery. Rubber machinery manufacture will, however, be largely in the private sector.

The output of cotton textile machinery, for instance, is sought to be raised from Rs. 350 million 1973-74 (estimated) to Rs. 560 million by 1978-79. The output for these two years for cement machinery would be worth Rs. 50 million and Rs. 280 million, for sugar machinery Rs. 200 million and Rs. 400 million, for printing machinery Rs. 15 million and Rs. 110 million, for rubber machinery Rs. 50 million and Rs. 180 million and for paper and pulp machinery Rs. 100 million and Rs. 260 million, respectively.

Programmes in respect of mass communication, computers and calculators call for an accelerated expansion of the *electronics* industry. A large proportion of the demand for consumer electronics is sought to be met from the private sector while a major supply of professional grade electronics is to be provided by the public sector. Self-reliance in electronics will require adequate support by way of research and development, and the Electronics Commission is to provide the broad framework for the development of the industry. In the public sector, the programmes include expansion of the Electronics Corporation of India Limited for the manufacture of electronic components, instruments and computers, expansion of Indian Telephone Industries Limited for the production of switching equipment and transmission equipment and expansion of Bharat Electronics Limited for the manufacture of electron tubes, integrated circuits, microwave components and guides and professional grade components. To meet the needs of specialised requirements not covered in the production profile of the above undertakings, the Department of Electronics of the Government of India envisages creation of additional facilities for the production of items like semi-conductor devices, special tubes, peripheral controllers, basic peripherals, control components, microwave components and instruments. A beginning has been made for establishing an export based electronics industry with the setting up of the electronics export processing zone at Santacruz, Bombay. It is expected that this will step up electronics exports eventually. In the context of *ship building*, the Fifth Plan contemplates the optimum expansion of the shipyards at Visakhapatnam, Cochin, Mazagon Docks and Garden Reach Workshops. This would lead to a total capacity of 4,75,000 GRT. In addition, it is proposed to take up the construction of new shipyards for which preliminary studies have been initiated. The objective is to attain a large measure of self-reliance in the requirements of ships by the end of the Sixth Plan. For promoting self-reliance in the design of ships a Central Marine Design and Research Organisation is also to be set up in the Fifth Plan period.

A capacity of 4 million tonnes of nitrogen and 1.2 million tonnes of P_2O_5 is expected to be achieved in the *fertilizer* sector in the terminal year of the Fifth Plan. The plan envisages the establishment of 5 new fertilizer projects in the public sector, estimated to contribute an additional capacity of 1.3 million tonnes of nitrogen and 0.2 million tonnes of P_2O_5. Additional capacity of the order of 0.6 million tonnes is also to be set up in the private sector. A capacity target of 7 million tonnes of nitrogen and 1.7 million tonnes of P_2O_5 is envisaged for 1978-79. Based on these programmes, production is sought to be stepped up to the above levels as compared to 1.16 million tonnes of nitrogen and 350,000 tonnes of P_2O_5 in 1973-74.

The programme for *petrochemicals* in the public sector during the Fifth Plan is limited to the completion of the naptha cracker and the downstream units at Baroda and Bongaigaon refinery–a public sector complex in Assam.

Consumption of *petroleum products* has risen at a rapid rate in the last two decades—9.4 per cent per year during the period 1960-61 to 1970-71. It has been estimated that with a throughput of 36 million tonnes of crude in 1978-79, the major requirements of petroleum products can be substantially met. The refinery programme has been drawn up in line with this target. The schemes already under implementation including the Haldia refinery and the revamping of the Barauni refinery are to contribute to a capacity of 24.6 million tonnes. In addition, the Fifth Plan includes the construction of Bongaigaon refinery (one million tonnes), Mathura refinery (6 million tonnes) and expansion of Koyali refinery (3 million tonnes). This will bring up the refinery capacity to 34.6 million tonnes. Refinery target capacity has been tentatively placed at 39 million tonnes for the year 1978-79 as against 21.5 million tonnes in 1973-74.

Even with the restricted consumption of petroleum products, the gap between crude requirement and domestic production is likely to widen. The establishment of additional reserves of crude would, therefore, assume priority. A ten year perspective plan for oil exploration has been drawn up envisaging the establishment of crude reserves of 70 million tonnes to yield an additional production of 4 million tonnes of crude by the end of the Fifth Plan. The total domestic production of crude oil by the Oil and Natural Gas Commission will be then raised to 8.42 million tonnes per year. The Oil and Natural Gas Commission would expand its activities abroad apart from the concessions already secured in Iran, which is expected to yield a quantity of about 0.6 million tonnes of crude in 1978-79. ONGC secured concessions in Iraq also. An intensive programme of off-shore exploration on the Indian continental shelf is envisaged. Additionally, M/s. Oil India Limited have a programme of oil exploration in Dumduma and Nigru areas of Assam. With the programmes of ONGC and M/s. Oil India, the average indigenous production of about 12 million tonnes of crude per year is expected to be reached by 1978-79.

The requirements of *coal* by the end of the Fifth Five-Year Plan are estimated at 135 million tonnes consisting of 32 million tonnes of coking coal as well as 101 million tonnes of non-coking coal and 2 million tonnes of blendable coal. Coal production is expected to increase from 70 million tonnes in 1973-74 to 135 million tonnes by 1978-79. The nationalisation of coalmines would make it possible to reorganise and rationalise the production.

Production target for *iron ore* is placed at 58 million tonnes for 1978-79 (37 million tonnes estimated for 1973-74). It is hoped that with marginal investment, the level of export may be stepped up from 22 million tonnes in 1973-74 to 35 million tonnes by the end of the Fifth Plan. Production from the public sector mines of the steel plants, the National Minerals Development Corporation and the Orissa Mining Corporation is expected to amount to 34 million tonnes. The share of the private sector would be 24 million tonnes. The Fifth Plan provides for the establishment of a pelletisation plant of a capacity of 2 million tonnes in Karnataka.

The production of *paper and paperboard* is to be stepped up to a level of 1.25 million tonnes by 1978-79 from 830,000 tonnes in 1973-74. The output of newsprint is envisaged to improve to 150,000 tonnes as against 43,000 tonnes in 1973-74. The major contribution to newsprint production is to come from the public sector. Apart from the expansion of Nepa mills to 75,000 tonnes, a new project for the production of 70,000 tonnes of newsprint will be established in Kerala during the plan period. Also three paper projects are sought to be established by M/s. Hindustan Paper Corporation in the North Eastern region during the plan period.

From the estimated level of production of 16 million tonnes in 1973-74, *cement* output will be stepped up to 25 million tonnes by 1978-79. The programmes of the Cement Corporation envisage construction of 6 new projects in addition to the completion of the programmes under way. The total capacity of the Corporation will be over 3 million tonnes. The state sector is expected to contribute an additional 2.5 million tonnes to 3 million tonnes while about 3 to 4 million tonnes of capacity is expected to be developed in the private sector.

Apart from the industries mentioned above, the Fifth Plan provides for the expansion of a number of other sectors including sugar, vegetable oils and vanaspati, cotton textiles, drugs and pharmaceuticals, in organic chemicals, light engineering goods, rubber goods glass and ceramics and food processing industries. In respect of industrial and minerals programmes relating to atomic energy, the major jobs undertaken to be completed in the Fifth Plan are the completion of heavy water plants, the schemes under the nuclear fuel complex and the expansion of public sector undertakings in the Department of Atomic Energy which includes the production of atomic minerals and their processing.

OIL POOLS TRAPPED IN COAL

An Indian petroleum geologist of Oil and Natural Gas Commission (ONGC) has recently discovered the presence of oil pools "inside" coal in the Cambay basin, according to the information received from M/s. Indian Oil Company.

Nowhere in the world has oil been found in association with coal. Even in North Sea, natural gas but not oil was found in coal reservoirs.

But the entire "Kalol" field, part of the Cambay basin north of Ahmedabad, contains "pools" of heavy crude trapped in huge chunks of coal.

The ONGC scientist in a paper submitted during the Indo-Soviet Symposium on oil exploration said "Inside the isolated sealed pockets, oil and gas are present under abnormally high pressure which is unusual".

The origin of oil pockets inside coal and the presence of fresh and not salty water along with the oil had baffled scientists.

The Oil and Natural Gas Commission, Dehradun, is engaged in the exploration of crude oil. The Commission carries out geological and geo-physical survey for exploration and drilling and other prospecting operations. Since its inception, the Commission drilled over 990 wells upto 1972. In the off-shore operations undertaken by the Commission, exploratary drilling on certain off-shore structures in the Arabian Sea adjoining the gulf of Cambay is expected to bear fruit soon.

SPINNING POTS DEVELOPED INDIGENOUSLY

Hitherto figuring prominently in India's import trade, spinning pots, attached to spinning frames, used in the manufacture of rayon filament yarn have now come to be manufactured within the country for the first time. M/s. Indian Plastics Limited, Bombay is the firm to commence production of these spinning pots on commercial scale.

Spinning pot is an essential sophisticated component attached to spinning frame for the manufacture of rayon filament yarn. So far, spinning pots were being manufactured in only two countries. The Bombay firm's successful endeavour in the manufacture of these spinning pots indigenously has indeed added one more sophisticated engineering item to the country's production stream. The firm's rated production capacity to the tune of 30 pots per day is expected to be achived by April, 1974. The estimated production of these pots, it is expected, would meet the domestic demand for replacement in the rayon producing units in the country. Currently, all the units engaged in rayon manufacture are making use of imported pots. Therefore, indigenous manufacture of these is expected to save sizeable sum of foreign exchange every year.

The spinning pots are made of mouled phenol formaldehyde resin. These have been subjected to vigorous trials frequently in some of the rayon factories and modified over the period of years with a view to make these work at par with the imported ones.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

NEW PROCESS FOR STEEL MANUFACTURE

A new process of steel making which neither requires a blast furnace nor coke, is stated to be developed by metallurgists and scientists of the Banaras Hindu University and the National Metallurgical Laboratory (NML), Jamshedpur, West Bengal.

The new process, it is claimed, can produce steel using any kind of coal, natural gas or even nephtha whichever is available. Apart from using coal of inferior type, the process would enable to re-cycle waste scrap, converting it to steel.

The process involves converting of iron ore directly into metallic iron by passing hot reducing gases through the ore. The hot gases required can be produced by gasifying coal of any variety and the gases directly convert as much as 92 per cent of the ore into metallic iron. The resulting iron is porous mass called 'sponge iron' which is simply melted in an arc or electric furnace to remove the impurities to make steel.

On the other hand, in a blast furnace, a mixture of iron ore, lime and coke in the form of sinters is heated into a messy liquid called pig iron. The liquid contains as much as four per cent of dissolved carbon which must be driven away in huge convertors to make steel.

With a view to achieve economy and efficiency in steel production, blast furnace is required to be very large with other limitation that it cannot make use of non-coking coal. However, the sponge iron plants, using the new process can be set up using the inferior coal whose reserves in the country have been estimated at 120,000 million tonnes. Apart from this, elimination of coke in the new process can help establishment of sponge iron plants anywhere in the country. The NML's pilot plant making use of non-coking coal and iron ore pillets is currently producing 4 tonnes of sponge iron a day which is directly melted into steel in an electric furnace. At Banaras Hindu University, a pilot plant of different designs is presently producing 250 kgs. of sponge iron per day which is melted into steel inside an arc furnace.

Based on the pilot plant studies at NML, larger units of upto 200 tonnes of sponge iron per day can be set up. Apart from these, mini plants making sponge iron and using electric furnace for melting it is the economic way of producing steel. The scrap, available abundantly in the country could be re-cycled into steel by mixing it with sponge iron.

VISCOMETERS AND THERMOMETERS DEVELOPED

An extrusion viscometer for measuring viscosities above 100 poise, has been developed at the National Physical Laboratory, Underhill Road, New Delhi. The viscometer gives viscosity in absolute units for quick routine tests and for checking batch to batch variation. It can be used for pastes and materials with high viscosity of the range above 100 poise. The process has already been released for commercial exploitation.

NPL has also developed techniques for the fabrication of different types of precision platinum resistance thermometers suitable for different temperature ranges. These thermometers can measure temperature to a precision of 0.001° Centigrade. The cost of these thermometers is about 50% of an imported one. Stem-type thermometers for the range 600°C to −183°C and capsule type for the range 0°C to −259°C have been successfully fabricated and supplied to various research organizations.

ALUMINIUM ALLOYS REPLACE COPPER

Aluminium has now been transformed into an all-important multipurpose metal. New alloys of aluminium now made in India are replacing not only copper but also zinc and nickel for use in various industries ranging from printing to electrical.

About 55 per cent of the aluminium produced in the country (estimated at 176,000 tonnes in 1972-73), finds its way into the electrical industry, substituting copper and thereby saving Rs. 1,600 million in foreign exchange. It has replaced copper in electrical motors upto 30 h.p. It has also been used as a substitute for brass in building hard-ware, utensils, household goods, containers and lamp caps.

Indian railways have already started using aluminium for overhead electrification thereby saving foreign exchange to the tune of Rs. 20,000 per kilometer installed.

Research in 'powder metallurgy' at the Indian Institute of Technology, Bombay has shown that aluminium ball-bearings can replace steel. At the Banaras Hindu University, a technique for reinforcing aluminium to double its strength has been evolved. New aluminium alloys have also been developed at the National Aeronautical Laboratory, Bangalore for use in aircraft frames.

OUTPUT TRENDS OF SELECTED PRODUCTS

Item	Unit	1970-71	1971-72	* 1972-73	** 1973-74
Foodgrains	million tonnes	108.04	104.7	96.0	114.0
Pulses	-do-	11.8	11.1	10.2	11.5
Oilseeds	-do-	9.3	8.3	7.0	9.0
Sugarcane (in terms of gur)	-do-	13.0	11.7	12.6	13.6
Cotton (lint)	million bales	4.5	6.5	5.4	6.5
Jute	-do-	4.9	5.7	4.9	5.6
Tobacco	thousand tonnes	362.0	409.0	...	370.0
Coking coal and non-coking coal	million tonnes	72.9	71.11	75.11	79.0
Iron ore	-do-	31.8	33.6	35.0	37.0
Crude petroleum	-do-	6.8	7.4	7.4	7.7
Tea	million kgs.	421	429	453	460
Sugar	million tonnes	3.74	3.11	3.6	4.3
Cotton yarn	million kgs.	929	902	972	940
Cotton cloth	million metres	7797	7483	8054	7800
Jute manufactures	thousand tonnes	958	1129	1211	1220
Paper and paper board	-do-	755	803	803	830
Newsprint	-do-	37.0	40.0	42	43
Leather footwear	million pairs	15.7	15.7	13.3	16.0
Petroleum products (including lubricants)	million tonnes	17.1	18.6	17.9	21.5
Nitrogenous fertilizers (N)	thousand tonnes	830	952	1060	1162
Caustic soda	-do-	371	385	406	450
Soda ash	-do-	449	489	491	500
Drugs and pharmaceuticals	Rs. million	2750	3000	...	3000
Paints and varnishes	thousand tonnes	65.2	65.3	69.0	70.0
Cement	million tonnes	14.4	15.0	15.54	16.0
Pig iron for sale	-do-	1.32	1.23	1.37	1.8
Mild steel	-do-	4.48	4.52	4.76	5.44
Tool alloy and special steel	thousand tonnes	411	438	400	400
Aluminium	-do-	166.8	181.5	175.6	190
Copper	-do-	9.3	8.3	12	18
Zinc	-do-	21.2	24.6	23.6	28
Agricultural tractors	thousand nos.	23.7	16.6	20.1	40.0
Cotton textiles machinery	Rs. million	303	335	...	350
Sewing machines	thousand nos.	235.0	312.0	313.0	415.0
Electric transformers, above 33 kva and 33 kva and below	million kva	8.09	8.95	9.39	12.5
Electric motors above 200 h.p. and 200 h.p. and below	million h.p.	2.72	2.35	2.76	3.6
A.C.S.R. conductors	thousand tonnes	64.2	79.7	78.4	85.0
Dry batteries and storage batteries	million nos.	507.17	577.20	632.17	671.10
Electric fans	thousand nos.	1716	2067	2473	2625
Radio receivers	-do-	1794.0	2004.0	...	3400.0
Wireless and microwave equipment	Rs. million	350	400	420	470
T. V. sets	thousand nos.	5.2	7.8	...	50
Passenger cars	-do-	35.8	39.3	40.0	42
Commercial vehicles	-do-	41.2	39.7	39	48
Auto ancillaries	Rs. million	970	1070	1260	1700
Motor cycles, scooters, mopeds and wheelers	thousand nos.	113.9	135.8	149.0	184
Railway wagons	-do-	11.1	8.5	10.9	13
Bicycles	-do-	2042	1766	2400	2600
Electricity generation	GWH	60.1	...	...	72.0

* Provisional ** Estimates

Source : Draft Fifth Five-Year Plan (1974-79), Part I, Planning Commission.

INDIA'S BALANCE OF PAYMENTS POSITION

While reviewing the balance of payments position in the Fourth Five–Year Plan, which is to end by 1973-74, the draft Fifth Five-Year Plan (1974-79) has indicated that the payments position was fairly stable in the first three years of the Fourth Plan. Besides clearing the entire outstanding borrowing of Rs. 2,790 million from the International Monetary Fund, the country added Rs. 2,720 million to its foreign exchange reserves raising these to Rs. 8,490 million. There was thus an improvement in the reserve position of Rs. 5,510 million in relation to the period 1969-70 to 1971-72. This was made possible to the extent of Rs. 2,446 million by the allocation of Special Drawing Rights (SDRs) by the IMF and Rs. 244 million by the appreciation in the value of reserves consequent upon the changes in the par value of reserve currencies. The balance of Rs. 2,820 million reflected the true balance of payments surplus exclusive of repayments to the IMF.

During the first three years of the Fourth Plan, the realisation in relation to the total amount projected in the Plan period was 54 per cent in respect of imports, 59 per cent in regard to the debt service, 100 per cent for repayments to the IMF, 53 per cent for exports and 60 per cent for foreign aid.

The balance of payments position in the subsequent period has also continued to be reasonably stable, as indicated by the fact that at the end of July 1973, the foreign exchange reserves was of the order of Rs. 9,088 million showing an increase of Rs. 601 million over the amount at the end of 1972-73. During this period, there were no fresh allocations of SDRs, but there was an appreciation in reserves of the order of Rs. 350 million. This indicates the improvement in surplus in the balance of payments over period April 1972–July 1973.

The major objective of the Fourth Plan was to reduce the foreign aid net of debt to the level of pre-Plan period. The net aid is estimated to have declined from Rs. 5,276 million in 1968-69 to Rs. 1,236 million in 1972-73. The inflow was thus reduced to less than a quarter of pre-Plan level.

As for exports, the earnings rose from Rs. 13,577 million in 1968-69 to Rs. 14,133 million in 1969-70, Rs. 15,352 million in 1970-71, Rs. 16,082 million in 1971-72 and Rs. 19,609 million in 1972-73. The total for the four years was Rs. 65,176 million. The exports in 1973-74 are likely to be of the order of Rs. 20,000 million. On this basis, the total for Fourth Plan as a whole would come to Rs. 85,180 million as against the Plan projection of Rs. 83,000 million. The commodities which made important contribution to increase in the exports have been leather and leather products, engineering goods, cotton textiles, handicrafts, fish and fish preparations and jute manufactures, unmanufactured tobacco, oilcakes, iron ore, chemicals and allied products and coffee. The export trade in the Fourth Plan would, thus indicate a good performance especially when judged against the unusual strains experienced by India on account of influx of millions of refugees from Bangladesh, Indo-Pakistan hostilities, short supply of metals and power, adverse effect of severe droughts and floods, international currency uncertainities and restrictive trade policies persued by the developed countries.

In the Fourth Plan, the import requirements were estimated at Rs. 97,300 million. The actual imports declined sharply from Rs. 19,080 million in 1968-69 to Rs. 15,820 million in the subsequent year. In 1970-71, however, there was a modest increase to the level of Rs. 16,340 million. There was a further rise in 1971-72 to Rs. 18,240 million. The major items responsible for the rise being steel, machinery and equipment, P.O.L. products and raw-cotton. There was a modest decline in 1972-73 to Rs. 17,970 million The total for the four years adds up to Rs. 68,375 million leaving a balance of Rs. 28,920 million for 1973-74. In this year, the actual imports will be substantially below this figure.

The Fifth Plan projections in respect of balance of payments have taken into account factors, such as, recent sharp rise in the world prices of some of India's major import items like foodgrains, P. O. L., steel, non-ferrous metals, fertilizers and newsprint as also the growing burden of debt services. While making the projections in the Fifth Plan, certain assumptions have been made : the country will bring about a fresh

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improvement in the payments balance so as to meet by 1978-79 the maximum amount of her foreign exchange requirements from domestic resources; restraint on imports; progressive re-constructing of energy base of the economy; to make greater use of coal reserves and economise petroleum products; fully exploit the country's known reserves of petroleum and intensify exploration for new reserves; increase foodgrain output and appreciably manage the food economy improve export trade and so on.

The Fifth Plan has estimated that the gap to be met by external assistance would be of the order of Rs. 40080 million; the debt service charges would be Rs. 25570 million and thus net aid would be Rs. 14510 million.

Exports have been projected to grow from an estimated Rs. 20,000 million in 1973-74 to Rs. 28,900 million in 1978-79. The rate of growth works out to 7.6 per compound per annum. Large increases in export earnings are envisaged from engineering goods, iron ore, handicrafts including jewellery, cotton textiles, steel, fish and leather products. These seven items account for about two-thirds of the total increase of Rs. 8900 million projected for the five year period. Domestic efforts at export promotion are to be directed to items with a vast growing world demand, and therefore, reorientation of the production structure in tune with world would form essential component in the export strategy to be followed in the Plan period. As labour is fairly scarce and wages are high in advanced countries, it is increasingly un-economical for them to undertake labour intensive industries, such as, textiles. Even in the case of capital intensive fields, there are certain stages and operations which are labour intensive; as for instance in the case of assembly of the electronics and castings in machine building. To tap this potential fully, the Fifth Plan states that it would be necessary to enter into long term agreements with countries who would like to draw their supplies from India. Such agreements will ensure that they could depend on India for their regular supplies. Engineering products, metal products, plant and machinery, transport equipment and consumer durables constitute another area of emphasis in the Plan's export strategy.

The import bill has been projected to grow to Rs. 31,200 million in the final year of the Fifth Plan. This does not include any provision for import of foodgrains. If the non-food imports in 1973-74 turn out to be of the order of Rs. 21,500 million, the import projection will yield a range of growth of 7.6 per cent per annum which will be the same as for exports. Of the total estimated exports of Rs. 14,100 million during Fifth Plan period, P.O.L. accounts for 22 per cent, metal products, machinery and transport equipment 28 per cent, steel and non-ferrous metals, ores and scrap 48 per cent, fertilizer and raw materials for fertilizers 10 per cent and the rest including all Government imports 26 per cent (the figures exclusive of foodgrains exports). The thrust of the import substitution programme in the Plan will be in four major areas, viz. P.O.L., metals, machinery and equipment and fertilizers. These account for over two-thirds of the estimated imports in the Plan period. Other promising areas of import substitution mentioned in the Plan document are chemicals, pharmaceuticals and drugs, newsprint, vegetable oils, animal fats, raw-cashewnuts, raw-wool and wood pulp. The country is well on the way towards self-sufficiency in raw-cotton including long staple varieties. The outlook is also optimistic in respect of natural rubber.

In addition to the components mentioned above viz. external assistance, exports and imports, the balance of payments position comprises services too. It is projected that the balance under 'Services' will be a net surplus of Rs. 9.40 million during the Fifth Plan period. The items under the 'Services' are foreign travel, transportation, insurance and so on. ☐

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STORAGE BATTERIES TO WORLD MARKETS

Over the years of its existence, M/s. Chloride India Limited, Barlow House, 59-C, Chowringhee Road, Calcutta-20, have stepped up its exports to the tune of over Rs. 10 million in 1972-73. Despite keen competition from the developed countries, their batteries are sought by over thirty countries abroad.

The firm exports storage batteries, catering to the requirements of a wide spectrum of operations, mining, material handling, agricultural machinery, defence, transport and communications. In their well diversified range of destinations abroad are even the sophisticated markets, such as U.K., U.S.S.R., Australia, German Democratic Republic, Czechoslovakia and New Zealand. They have lately released 'Index'—an export brand which is steadily gaining reputation because of quality and performance.

With a view to keep pace with the rapidly changing needs of consumers at home and abroad, the firm intends to take up manufacture of the new generation battery using multi-coloured poly-propylene containers for certain applications at their plant at Chinchwad near Poona in the Maharashtra State.

In the field of agriculture, their heavy duty batteries are used for tractors and tillers while in the field of transport, their 'Exide' and 'Dagenite' brands of storage batteries are commonly used for cars, buses and trucks. In the area of communications, the firm supplies power for running communication systems while their 'Exide Iron Clad batteries' provide power for lights, fans and airconditioning on trains. Aside from these, their specially designed batteries find wide applications in defence.

The firm manufactures batteries of different types with the technical know-how developed by the Central Research Development Laboratory of the United Kingdom. It is progressively endeavouring to make use of indigenous raw materials and equipment in place of imported ones.

In the area of research and development, the firm's plan to set up an advanced research and development centre is in progress.

The firm has two manufacturing plants, one located at Calcutta and the other ultra-modern plant at Chinchwad near Poona. The Poona plant reached full manufacturing capacity within 12 months from the date of commissioning. It is now proposed to double the production of this plant and also to establish a container plant to make the plant self-reliant in this field.

In the organised sector of Indian economy, there were eight units engaged in the manufacture of storage batteries with an installed capacity of 1.42 million numbers in 1972. Their actual production during the year was estimated at about 1.11 million numbers valued at over Rs. 205 million. During 1971, seven units in the line with an installed capacity of 1.26 million numbers manufactured 1.15 million numbers at a cost of Rs. 190.20 million.

India's exports of batteries and accumulators were of the order of Rs. 28.40 million in 1972-73 as compared to Rs. 25.57 million in the preceding year. Sudan, Federal Republic of Germany, U.S.S.R., Nepal, Poland and Czechoslovakia were the main importing countries.

EXPORT ORDERS FOR POWERLOOM AND HANDLOOM CLOTH

Overseas orders valued at Rs. 3 million for powerloom and handloom cloth have been secured by an Indian delegation during its visit to United States, United Kingdom and certain European and West Asian countries, undertaken recently. The delegation was sponsored by the Government of Maharashtra for exploring the possibilities of exports of powerloom and handloom cloth to these countries. Apart from the orders secured, further enquiries were also received by the delegation.

The Maharashtra State Powerlooms Corporation Limited, a Public Sector Undertaking, proposes to set up a processing plant at an estimated cost of Rs. 15 million at New Bombay. The Corporation hopes to step up its export to Rs. 50 million mark during 1974. During 1973, its exports were valued at Rs. 20 million.

The Corporation's loom coverage is of the order of 5,000 numbers and it has four regional offices located at Malegaon, Nagpur, Bhivandi and Dhulia in the State.

India exports a variety of handloom and powerloom cloth. The range broadly covers handloom piece-goods of rayon, silk, wool, man-made fibres, embroidered handloom piecegoods and a comprehensive range of handloom goods. In the powerloom sector, the export items include bed sheets, counterpanes, pillow cases of cotton, powerloom fabrics of

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continuous regenerated fibres, powerloom piecegoods of cotton and a number of other items in the line.

India's textile sector has 648 mills in its infrastructure (July 1972). Of these, 394 are spinning mills and 290 composite mills. Both the categories of mills in the country have a total installed capacity of 18.31 million spindles (July 1972). Of the total installed capacity, spinning mills account for over 6 million spindles while the share of composite mills is of the order of 12.25 million spindles (207,800 looms).

INDIAN FOOTWEAR TO U.S.S.R.

India-manufactured footwear is picking up overseas demand in growing volume from year to year. During 1972-73, the footwear industry's foreign exchange earned Rs. 128.60 million as compared to Rs. 117.60 million in the preceding year. In fact, this labour intensive industry occupies a significant place among the export oriented sectors of Indian economy.

U.S.S.R. is the principal importer of Indian footwear. Variety-wise, its intake during 1972-73 constituted : leather closed-toe footwear Rs. 41.68 million (1.28 million pairs); rubber footwear Rs. 1.85 million (0.14 million pairs) and rubber soled upper canvas footwear Rs. 4.57 million (0.57 million pairs). U.S.A., the next significant importing country, bought worth Rs. 28.77 million—all leather open-toe footwear Rs. 21.12 million (2.54 million pairs), rubber soled upper-leather footwear Rs. 4.35 million (0.52 million pairs) and all leather closed toe footwear Rs. 2.75 million (0.21 million pairs).

U.K., Nepal, Australia, Denmark, Canada, Canary Islands and Netherlands were prominent among ther buyers.

Recently, M/s. State Trading Corporation (STC) ave signed an agreement with the U.S.S.R., for the pply of leather shoes at a value of Rs. 7.65 million. Soviet Union is the biggest importing market of Indian footwear. Including this agreement, STC's total shoe export orders secured from U.S.S.R., from January to June 1974, would aggregate to Rs. 23 million. Earlier, a sizeable contract for supply of Indian shoes valued at Rs. 15.35 million was signed by the STC with U.S.S.R., in August 1973.

STC is hopeful of securing more export contracts from U.S.S.R. for leather shoes after the Trade Protocol for 1974 between India and U.S.S.R. is signed.

India's total exports of leather and leather manufactures (excluding footwear) during 1972-73 was of the order of Rs. 1,745 million as against Rs. 907.65 million in 1971-72.

India supplies overseas a wide variety of leathers to a well diversified range of markets annually in growing volume. Its customers included U.S.S.R., U.S.A., U.K., Japan, Italy, Canada, Australia, Federal Republic of Germany and a large number of developing countries.

TEXTILES ON EXPORT STREAM

M/s. Kothari (Madras) Limited, Madras, Oriental Buildings, Armenian Street, have contributed Rs. 4.40 million to India's foreign exchange earning by supplying overseas a variety of textiles during 1972-73. Their exports rose moderately to the present level from Rs. 4.20 million in the preceding year. Their exports of textiles are further registering uptrend in the current year (1973-74). During the period July to October 1973, their textiles have brought in foreign exchange as much as Rs. 2.52 million.

The firm has a sound base for production of divergent items like textiles, tea, coffee and fertilisers. They have active plans to further diversify their existing range of products. They are soon to commence production of teryviscose yarn at their two textile mills, located at Coimbatore and Adoni. They are currently engaged in installation of machinery at the Coimbatore plant with a view to achieve diversification in the field of textiles.

They have made a good headway in the field of modernisation and rehabilitation of machinery. Already a sum of Rs. 1.6 million has been spent by them during the year under review on the modernisation scheme and have further plans to spend about Rs. 10.7 million in this field.

India's textile industry has carved a significant place for itself in the entire industrial infra-structure of the country. Alongside consistent increase in production, the industry has achieved notable strides in exports. For instance, during 1972-73, the industry's exports of cotton manufactures fetched as much as Rs. 1,267 million as compared to Rs. 1,000.50 million in 1971-72, Rs. 974.65 million in 1970-71 and Rs. 866 25 million in 1969-70.

A wide variety of cotton manufactures are supplied to a well diversified range of markets abroad every year, among which U.S.S.R., U.S.A., Yugoslavia, France, Bangladesh, U.K., Kuwait, Canada, Singapore, Sweden, Dubai, Mauritius, Denmak, Federal Republic of Germany, Saudi Arabia, Zambia, Uganda, Nigeria and Poland are significant.

EXPORT PERFORMANCE AND POTENTIAL

OIL CRISIS AND FOREIGN TRADE

India's foreign trade sector is faced with a challenge on account of oil crisis. Notwithstanding severe constraints of production, the country's export earnings have continued to increase significantly and in the first half of 1973-74 (April-September 1973), the increase has been of the order of 17 per cent over the same period of 1972-73. At the present rate of growth, it would be possible to substantially exceed the export target set for the year (1973-74) of Rs. 20,710 million. But the import value during this period was considerably higher as compared to the corresponding period of last year. It is obvious, therefore, that measures must be taken to maximise exports and to restrict imports to only such items and proportions which are inescapable, stated India's Minister, Prof. D. P. Chattopadhyaya while inaugurating the sixth meeting of the Advisory Council on Trade which met recently in New Delhi.

Indicating the magnitude of the problem created by the increase in prices of petroleum and allied products, the Minister stated that the total value of India's imports in this category was of the order of about Rs. 2,090 million in 1972-73, accounting for 10 to 11 per cent of the total export earnings during the same year. The projected import bill for India during the Fifth Plan period on this account has been estimated at Rs. 29,810 million. At the current price level of $ 10 per barrel this would have to be revised to Rs. 75,600 million for the plan period or about Rs. 15,120 million per year, the Minister added. The Organisation of Petroleum Exporting Countries (OPEC) has announced the price at $ 11.60 per barrel of crude. This would mean scaling up the country's import bill for POL products even further. Thus from the present level of 10 to 11 per cent, nearly 80 per cent of India's export earnings, at the present rate of progression, would have to go towards purchase of crude oil. It has been estimated that even if India's consumption of petroleum and allied products were to be reduced by one third of the present level, it would be imperative to find resources to the extent of Rs. 5,000 million per year to be able to meet the country's POL requirements alone. Such a sizeable commitment on oil front would not allow the economy to take care of the other normal import requirements for vital industrial raw materials and agricultural in-puts like fertilisers, chemicals and non- ferrous metals. It is in this context that a new export strategy needs to be devised for meeting an increased import bill on account of oil.

The Government of India are seriously considering proposals for substantially augmenting exports to oil producing countries, according to the Commerce

Minister. With Iraq, India has an Agreement on Economic and Technical Cooperation and within the frame work of the Agreement, it is proposed to undertake intensive dialogue to ensure that the new trade plan with that country would truly reflect the objectives contained in the Agreement "for developing, extending and consolidating economic and trade relations between their respective countries on the basis of equality and mutual benefit." With Iran, the Indian Government intends to develop a special economic and trading relationship. While the recent visit of the Iranian Foreign Minister proved extremely useful, it is hoped that the forthcoming discussions with the Iranian Minister for Economy and Planning will help provide a more specific direction to the measures for enhancing Indo-Iranian commercial exchanges. To the other oil producing countries of the West Asian region like Saudi Arabia, Libya, Kuwait, Abu Dhabi, Qatar and Bahrein Islands, the Indian Government intends to substantially augment exports of items like tea, spices, machinery, transport equipment, iron and steel structurals, *basmati* rice and cement. Also a number of joint venture proposals with some of these countries are under consideration. With Saudi Arabia, for instance, there is a proposal to enter into a venture in respect of cement and steel plants; with Kuwait for tyre manufacturing and vegetable oil plants; with Abu Dhabi for a steel rolling mill and so on. In respect of Iraq, India has identified a number of projects at the time of concluding the Agreement on Economic and Technical Cooperation. When these export projections and possibilities of participating in turnkey projects already indentified are collated, a new export strategy to the oil producing countries would emerge, stated the Minister.

India's major export potential to a number of oil producing countries would lie in respect of variety of products which are in considerable short supply, particularly items like cement, sugar and *basmati* rice. These exports would have to be increased even at the cost of restricting domestic consumption. "We should be prepared to make these sacrifices and curtail our domestic requirments in respect of these items if we are to, even in some measure, meet the increased import bill on account of petroleum products through our increased export earnings to this region," stated the Minister.

RECENT TRENDS IN INDIA'S EXPORT TRADE

The first half of 1973-74 (April-September, '73) has witnessed a 17 per cent export growth in India at Rs. 10,750 million over the export performance in the corresponding period of 1972-73. During the same period, imports grew at a higher rate of about 31 per cent mainly because of larger requirements of food, fertilizers, petroleum and petroleum products, non-ferrous metals and steel. As a result, India's balance of trade position turned into a deficit at Rs. 420 million during April-September 1973 as compared to a surplus of Rs. 660 million in the corresponding period of 1972-73.

Indian exports during 1972-73 touched a figure of Rs. 19,610 million, recording an increase of 22 per cent over those for the year 1971-72. Imports, on the other hand, fell to Rs. 17,970 million, showing a marginal decline of Rs. 280 million (1.5 per cent) compared to the imports of the order of Rs. 18,250 million during 1971-72. The balance of trade during 1972-73 thus became favourable to India (at Rs. 1,640 million) for the first time since independence.

It is creditable that the export performance in the first half of 1973-74 registered a 17 per cent rise notwithstanding the recent drought and acute shortage of power which had an adverse impact on the output of a number of agricultural and industrial items. The higher unit value realisation in respect of a number of export products proved to be a helpful factor.

The commoditywise details of exports are available for the first quarter (April-June, 1973) of 1973-74. In terms of value, the major increases in exports during the quarter were in respect of oil and oilcakes, leather and leather manufactures, iron ore, cotton piecegoods and tobacco. There was, however, a decline in the export of jute manufactures, tea, cashew kernels, precious and semi-precious stones, cotton apparel and sugar. Since a major part of the increase in the overall exports occured in the second quarter (July-September 1973) of the year, the commodity trend of exports for the period April-June 1973 would not reflect the growth of exports over the entire first half of 1973-74. On the basis of current trends, exports have been faring well, particularly in respect of items like oil cakes, leather and leather manufactures, cotton piecegoods, pearls, precious and semi-precious stones, basic chemicals aed pharmaceutical products. Items like fish, spices, coffee, iron ore and other textiles are also reported to be performing well. The export of jute manufactures is expected to witness a recovery in the second half of 1973-74 in the light of substantial reduction in the export duty and the price of jute goods becoming increasingly competetive in relation to synthetics due to recent oil squeeze.

CASTOR OIL EXPORTS NEARLY QUADRUPLED

From Rs. 61.80 million during 1971-72, India's export trade in castor oil jumped up to fetch Rs. 226 million in 1972-73. In terms of quantity, the export performance was 45.70 million kgs. as compared to 17.89 million kgs.

The most important contributing factors for the sizeable export increase were the larger offtake by the Soviet Union at Rs. 72.86 million as compared to Rs. 55.40 million as also the tremendous rise in the import value of U.S.A., U. K. and Czechoslovakia. France and Japan which did not figure at all in the list of importers in 1971-72, have also purchased substantial quantities in the subsequent year.

U. S. purchases were of the order of Rs. 49.89 million (9.86 million kgs.); interestingly her purchases in 1971-72 were of the order of only Rs. 16,390. U.K.'s offtake was as much as Rs. 27 million during 1972-73 against Rs. 15,000 in 1971-72. Czechoslovakia has also made its offtake to the tune of Rs. 19.94 million against Rs. 3.9 million in the respective years.

The new customers, France, Japan and Netherlands respectively imported worth Rs. 27.38 million, Rs. 15.18 million and Rs. 6.8 million.

INDIAN OPIUM TO DEVELOPED COUNTRIES

Substantial quantities of crude opium are imported by advanced countries from India. The exports fetched as much as Rs. 162.12 million during 1972-73. In the earlier year, the export value stood at Rs. 114.80 million. In terms of quantity, during 1972-73, exports were nearly 918.8 tonnes as against 870 tonnes in 1971-72.

U. K. has been the major importer of Indian opium. Its purchases were of the order of Rs. 39.66 million (230 tonnes) during 1972-73 as compared to Rs. 29.57 million (222 tonnes) in the preceding year. Closely behind was the U.S.A., which purchased worth Rs. 36.52 million (201 tonnes) as against Rs. 25.6 million (194 tonnes). The Soviet Union is not far behind and its import value was of the order of Rs. 22.9 million (129 tonnes), as compared to Rs. 17.1 million (117 tonnes). France and German Federal Republic are also among the principal buyers of this item. Their import value from India stood at Rs. 15.9 million and Rs. 12 million respectively in 1972-73 as compared to Rs. 11.6 million and Rs. 11.4 million respectively in the preceding year. Among other purchasers were Italy, Japan, Spain, Switzerland and Netherlands.

SHARP INCREASE IN BICYCLE EXPORTS

In the wide range of engineering items that are sought in growing volume by overseas markets, in recent years, bicycles and parts have come to occupy a prominent place, next to automobiles and accessories. The year 1972-73 witnessed the exports to grow to Rs. 104 million as compared to Rs. 73 million in the preceding year.

Of the total export realisation during 1972-73, complete bicycles at a cost of Rs. 30.50 million were supplied to two and half a dozen countries as against

Rs. 16.67 million in the preceding year. In terms of quantity, 2,16,384 complete bicycles as compared to 1,27,857 were supplied abroad in the respective years. Iran which imported 67,235 bicycles at a value of Rs. 7.4 million topped the list of customers during 1972-73 while during 1971-72, Nigeria was the principal importer which purchased 42,207 bicycles valued at Rs. 5.6 million. Next to Iran, Indonesia was the second best buyer in 1972-73 at Rs. 7.22 million (49,063 numbers). Bangladesh emerged as the third best market having purchased 31,371 bicycles at a cost of nearly Rs. 5 million. Nigeria (Rs. 4.78 million), U.S.A. (Rs. 2.95 million) and Bulgaria (Rs. 1.11 million) were prominent among other customers.

In the range of bicycle accessories and parts exported during 1972-73, bicycle chains was the major item of export dynamism. These fetched nearly Rs. 7.70 million as compared to Rs. 4.7 million in 1971-72. U.S.A. at Rs. 1.95 million constituted the foremost buyer, followed by Nigeria at over Rs. 1 million, U.K. at Rs. 0.72 million and Federal Republic of Germany at Rs. 0.47 million. Apart from these significant buyers, Malaysia, Singapore, Poland, France, Turkey, Indonesia and Greece were the other destinations.

Bicycle free-wheels which secured foreign exchange at a value of Rs. 5.3 million in 1971-72 improved their overseas offtake sharply to fetch Rs. 7.1 million in the following year. Thailand constituted the main market which bought worth Rs. 1.17 million. Among other importing countries, Indonesia, Italy, Singapore, Nigeria, Iran, Malaysia and Arab Republic of Egypt were significant.

The export earnings of other accessories and parts that were supplied abroad during 1972-73 were: bicycle rims Rs. 3.77 million as against Rs. 2.6 million in 1971-72; bicycle spokes Rs. 2.41 million against Rs. 1.3 million; bicycle saddles Rs. 2.34 million against Rs. 2.5 million; bicycle tubes Rs. 1.8 million against Rs. 2.4 million and other parts nearly Rs. 48 million against Rs. 37 million.

Nigeria was the major importer of bicycle rims while Nigeria, Indonesia, Tanzania Republic, Singapore and Malaysia were the significant markets for spokes. Saddles were bought by about three dozen countries while bicycle tubes were purchased by about two dozen countries.

'Other parts' were bought by a wide range of countries among which Nigeria, Indonesia, Iran, Singapore, Thailand, Malaysia, Sri Lanka, Tanzania Republic and Iraq were significant.

In the organised sector, during 1972-73, the production of bicycles was estimated at 2.40 million numbers as against nearly 1.77 million numbers in 1971-72, over 2 million numbers in 1970-71 and 1.98 million numbers in 1969-70.

COIR EXPORTS FARE WELL

Exports of coir and coir products showed an upward trend during 8 months (April-November 1973) as compared to the corresponding period in the preceding year. The respective figures are Rs. 96.2 million and Rs. 95 million.

During the period under review, the items which have registered higher exports are coir mats (from Rs. 34.3 million in April-November, 1972 to Rs. 38.7 million in April-November 1973), coir matting (Rs. 4.5 million to Rs. 6.83 million), curled coir (Rs. 7.7 million to Rs. 8.82 million) and coir rope (Rs. 1.2 million to Rs. 1.6 million). Coir fibre, coir yarn, rugs and carpets, however, showed nominal decline.

The year 1972-73 witnessed an increase in coir exports to Rs. 143.4 million from Rs. 134.2 million in 1971-72. The major markets for coir and coir products are Australia, Canada, France, Denmark, Federal Republic of Germany, Italy, the U.K., U.S.A., U.S.S.R. and Zambia.

INDO-BANGLADESH COOPERATION ON JUTE

Pursuant to the recent discussions between the Minister for Jute in the Government of the People's Republic of Bangladesh and India's Commerce Minister, a long-term agreement between the two countries has been concluded relating to the aspects of production and export of jute as well as the import of raw jute into India from Bangladesh. The agreement would be a part of the Balanced Trade and Payments Arrangement which was signed between the two countries earlier.

It will indeed ensure stable quantums and prices of their collective export trade to the world markets. The two countries have also agreed to cooperate in undertaking joint research work in production apart from the marketing of raw jute and jute goods.

Jute goods have been and still are the back bone of India's exports although in the recent years their share in the total exports has come down comparatively because of development of new items of exports.

Indian jute industry mainly concentrated in West Bengal employs about 300,000 persons. In 1969-70, it accounted for 13 per cent of the country's total export earnings. This share rose to 14 per cent in 1970-71 and to 17.3 per cent in 1971-72. In 1972-73, the percentage came down to 12 because of an appreciable increase in exports of non-traditional items and fall in exports of jute goods.

The industry produces a variety of products, the most important being hessian or burlap, sacking, carpet backing cloth, cotton bagging, jute yarn, tarpaulins and webbing. The total annual production is of the order of 1.1 million tonnes. The percentage of various products by weight is hessian (33 per cent), sacking (44 per cent), carpets backing (15 per cent) and other items (8 per cent). Most of the sacking (about 85 per cent) is used in the country itself for bagging purposes. On the other hand, 78 per cent of hessian, 96 per cent of carpet backing and 60 per cent of other items are exported.

Exports of Indian jute products are spread over almost all countries of the world. The major markets for hessian cloth are U.S.S.R., U.S.A., Australia, Canada and U.K. while carpet backing cloth goes mainly to U.S.A. (about 78 per cent), Canada and Australia. Sacking mainly in the form of bags is exported to African countries, U.S.S.R. and New Zealand. Exports of all varieties of jute goods from India during 1970-71 (July-June) were 6,28,000 tonnes valued at Rs. 2,183 million. They rose to 700,000 tonnes valued at Rs. 2,860 million in 1971-72 but fell down to 539,000 tonnes valued at Rs. 2,330 million in 1972-73. The export of hessian during 1972-73 with comparative figures for the previous year in bracket was 254,000 tonnes valued at Rs. 1,180 million (278,000 tonnes valued at Rs. 1,220 million). Carpet backing cloth earned Rs. 770 million for 149,000 tonnes (Rs. 1,016 million for 222,000 tonnes in 1971-72). Exports of sacking cloth during 1972-73 were 65,000 tonnes valued at Rs. 190 million (135,000 tonnes valued at Rs. 400 million in 1971-72). Other varieties amounted to 71,000 tonnes valued at Rs. 180 million (65,000 tonnes valued at Rs. 180 million in 1971-72).

The traditional use of jute goods as bagging has been declining gradually since the end of World War II because of competition from synthetic bagging material and introduction of bulk handling. The Indian industry has been alive to the necessity of constant research for development of new types of jute goods for non-traditional uses. In the early sixties, carpet backing cloth was introduced and now forms about 33 per cent of India's jute goods exports. Research work is continuing in this direction. Furnishing fabrics of jute with fast colours have already been introduced in the market and seem to have made a good impression. New uses of jute fabrics in building industry are also being investigated.

With the recent rise in prices of crude petroleum in the world markets, the competitiveness of synthetics vis-a-vis jute bag is likely to suffer. This along with introduction of new varieties of jute products offers better prospects for jute and jute products.

IMPRESSIVE STRIDES IN HEAVY ELECTRICALS

The year 1972-73 witnessed the production of both the public sector enterprises, namely, M/s. Heavy Electricals (India) Limited (HEIL), Bhopal and M/s. Bharat Heavy Electricals Limited (BHEL), New Delhi reaching a new height at Rs. 568 million and Rs. 842 million respectively as against their total output at Rs. 424 million and Rs. 603 million in the preceding year. The production growth in terms of percentage during 1972-73 over that in 1971-72 in respect of HEIL was of the order of 34 while it was 40 in the case of BHEL.

The interesting feature of the production of HEIL was that during the year under review, HEIL turned out generating equipment to a capacity of 450 MW while the three units of BHEL, Tiruchi unit supplied equipment at an equivalent of 800 MW and Hardwar and Hyderabad units together supplied 650 MW of turbines and generators. In terms of value, the output of Tiruchi unit was estimated at Rs. 430 million as against Rs. 336 million while that of Hardwar unit was of a value of Rs. 231 million against Rs. 131 million and of the Hyderabad unit at Rs. 215 million against Rs. 162 million.

HEIL and BHEL, both completed supplies during the year in respect of 8 hydro sets and 7 thermal sets totalling to a generating capacity of about 1100 MW as compared to their previous annual average of about 300 MW of power equipment supplied to their customers in the preceding few years. This indicates nearly four-fold increase in their completed orders turnover during the year. Additionally, about 2500 MVA of power transformers, eletrics for building 150 diesel and electric locomotives and EMO's for the railways and 1800 circuit breakers ranging from 11 KV to 220 KV were also supplied by the both. About 30 per cent of the equipment manufactured was mainly delivered to the Railways, Steel plants and Petro-chemical industries.

The production of both, the HEIL and BHEL, is estimated to cross the Rs. 2,000 million mark during 1973-74 while the supply of equipment to Electricity Boards is estimated over 2,000 MW capacity. By 1975, the annual delivery in the range of 3,000 to 3,500 MW of power equipment is estimated to be achieved, accounting for optimum utilization of the installed capacity. The installed capacity currently is of the order of Rs. 1,960 million while the production value is Rs. 1,410 million.

Of the three units of BHEL, the range of output of Hardwar Plant today covers a variety of electrical equipment, such as, steam turbines and turbo-alternators of unit size–200 MW; hydro turbines and generators of all sizes upto 6,600 mm runner diameter and medium and large size AC and DC motors and frame proof motors.

The Second Unit-Heavy Power Equipment Plant and Switchgear Operations, Hyderabad, mainly turns out steam turbines and turbo-alternators of unit sizes 60 MW and 110 MW; industrial turbo sets in 1.5 MW to 60 MW range; centrifugal compressors, air-blast circuit breakers in 100 KV to 400 KV range and minimum oil circuit breakers in 25 KV to 132 KV range.

The High Pressure Boiler Plant at Tiruchirapalli is engaged in the manufacture of high pressure boilers for power utilities–Industrial boilers of all types (water tube, waste heat and chemical recovery), both conventional design and packaged types, pressure vessels for chemicals, paper, metallurgical and other industries, steam generators for neuclear power stations, valves and fittings for steam, oil and gas mains, boiler auxiliaries, such as, fans (radial and axial types), dust collecting equipment (mechanical and electrostatic precipitators), mill (ball, hammer and bowl types) and air pre-heaters.

Apart from these, BHEL can also undertake heavy machining and fabrication assignments and manufacture of cast iron and non-ferrous castings.

PROGRESS OF SHIP BUILDING

M/s. Hindustan Shipyards Limited, Visakhapatnam, one of the major public sector units engaged in the construction and repairs of ships of different sizes have achieved notable strides in production during 1972-73.

The year witnessed the shipyards' production reaching an all time high at Rs. 127.60 million from only Rs. 90.15 million in the preceding year, registering an impressive increase of 40 per cent. During 1970-71, their production of new ships was valued at Rs. 81.85 million and during 1969-70 at Rs. 69.55 million. With the consistent increase in the production during the preceding four years—1969-70 to 1972-73, the shipyards' production witnessed 83 per cent increase.

During 1972-73, the shipyard delivered two vessels and the third was delivered soon after the end of the year under review. Today, its orderbook indicates 25 ships of three different types on order. Its shiprepairing turnover was maintained more or less at the same level in 1971-72. It has built up capacity to undertake production of ships in the range of 60,000 to 80,000 DWT. Including the production and repairs of ships during 1972-73, the shipyards have contributed a saving about Rs. 300 million in foreign exchange.

Originally set up in 1941, the shipyard was brought under public sector in 1952 to construct ships of different types. Its annual ship building capacity has been estimated at 3 ships and is expected to go up to a level of 6 ships per annum.

India's ship-building industry comprises ship-building and repairing units, both in the public and private sectors and has operative tonnage of 2.16 million GRT as compared to only 192,000 GRT in 1947. Additionally 1.5 million GRT is on firm order. By the end of the Fifth Five Year Plan, the country's shipping tonnage is expected to be of the order of 10 million GRT. During 1970-71, the gross earning of Indian ships in overseas trade amounted to Rs. 1,680 million.

In the public sector, M/s. Mazagon Dock Limited, Bombay; M/s. Hindustan Shipyards Limited, Visakhapatnam; M/s. Cochin Shipyards Limited, Cochin; M/s. Garden Reach Workshops, Calcutta; M/s. Goa Shipyards; M/s. Central Inland Water Transport Corporation (CIWTC), Calcutta are the major units.

The work at the Cochin Shipyards has been progressing and about Rs. 160 million, so far, had been incurred on the various items of the project. The completed items include the training school complex, laboratory, power receiving station, oil and paint stores, temporary water supply and land acquisition. Work relating to hull shop, repair dock and quays, compressor room, building dock, railway siding and others are in progress.

According to the provision of the agreement with M/s. Scott Lithgow Limited of U.K., the first two consignments of designs and specifications pertaining to the 75,000 DWT Panamax bulk carrier had been received from the firm. The drawings are being studied by Indian engineers. The first batch of eight design engineers have been deputed to U.K. for training at Glassgow Shipyard.

The construction of a dry dock at Cochin Port is also proposed to be taken up during the Fifth Five Year Plan. A total expenditure of over Rs. 95.6 million for the entire project had been provided for. The project report for the dry dock is under examination.

The location of a super tanker oil berth at Cochin in the Bolghatty channel has also been approved by the Government and the port's consultants, M/s. Engineers India Limited, had been asked to prepare the detailed project report expected to be submitted by them early next year.

A Techno-Economic Group which was set up by the Indian Government to assess the suitability of various sites for two shipbuilding yards has submitted their report which is being examined by the Government.

Haldia will also be considered as a prospective site for setting up a shipyard during the Fifth Plan period alongwith other sites. A number of States had put forward claims and a decision will be taken on the selection of sites keeping in view the techno-economic considerations.

DEEP DRILLING IN RAJASTHAN

The Oil and Natural Gas Commission (ONGC) of India will soon start deep drilling operations in Sumarwali—Vikharan Nai area—in the Jaisalmer desert in Rajasthan. The projected depth of the well is 3500 metres. Drilling is to be carried out with a deep drilling rig, 3-D, Uralmash which has been diverted from Assam to Jaisalmer Project. The location of the structure is about 105 kms. from Jaisalmer, deep in the desert.

The deep drilling operations will be undertaken departmentally for the first time in the Jaisalmer area. The earlier deep drilling operations were carried out by M/s. FORASOL, a French drilling company, from 1964 to 1967 on contract basis for structural drilling. In all six deep wells were drilled by FORASOL. Indication of the presence of oil or natural gas of any commercial significance were not found, except in the Manehra Tibba area, where indications of the presence of natural gas at a shallow depth were obtained. These wells were drilled to about 2,000 metres.

Subsequently, the ONGC drilled eight shallow wells, departmentally, in the Manehra Tibba area to ascertain whether the gas find in that area was of commercial interest but the results were not encouraging.

The Jaisalmer Project, has since been re-set. It has adequate facilities of workshop for repairing and servicing of drilling machinery.

If this well gives favourable results, more wells will be drilled in the area. If the results are not favourable, the ONGC has plans to drill to still larger depths, on other structures farther-most where drilling will be undertaken to depths of 5000 metres and 4700 metres.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

RESEARCH PROGRESS IN PHYSICS

The contribution of National Physical Laboratory (New Delhi) is noteworthy in the context of research progress achieved in Physics in India.

The first among the chain of laboratories set up by the Council of Scientific and Industrial Research, which is India's prime institution to direct and organise industrial research in various sectors, NPL undertakes the establishment of national standards of measurements at internationally accepted accuracy. It also organises periodic calibration of standards and measuring instruments against national standards, testing of industrial products and appliances for quality performance and basic research in physics.

In regard to developmental testing and calibration of industrial products and instruments, NPL has already developed calibration facilities for a variety of appliances and instruments like voltmeters, ammeters, resistance boxes, signal generators, microwave power meters and thermometers. A test and evaluation centre has been set up for environmental testing of electronic and electronic equipment.

Apart from maintenance of standards and carrying out testing, NPL has engaged itself in the development of a number of products and processes. It has to its credit the development of complete know-how for silver mica capacitors, ceramic capacitors, soft and hard ferrites and piezoelectric ceramics. It has also developed know-how for the manufacture of projector and process carbons, sophisticated instruments like electrostatic photo-copying machine which can make copies on ordinary paper by a dry process employing a reuseable photosensitive plate.

In the field of basic research, NPL probed into subjects like thermo-ionic constants of metals, crystal graphic study, polytypism and dislocations, defect centres in alkali halide crystals, Mossbauer spectra and interfrometry. NPL's contribution to the field of radio and ionospheric research is no less significant. Studies of solar flares and their effect on radio communications was one of the important items in ionospheric and upper atmosphere research. Also included were the procedure for detection of atmospheric explosions by radio methods. The Radio Physics Group of NPL regularly provides information on radio propagation conditions to All India Radio, overseas communications service and the Posts and Telegraphs Department.

Mentioned in the succeeding paragraphs are some of the recent achievements of NPL:

Complete processing technology of *professional grade soft ferrites* right from the preparation of pure raw materials to the finished product, has been developed. This class of ferrites is used almost exclusively by the telecommunication industry, defence and professional grade instruments and equipment.

Process for the indigenous production of a variety of *phosphors* has been developed in the laboratory. The process involves chemical preparation of luminiscent materials of the II-VI group (ZnS & CdS), silicates and phosphates–all these are indigenous raw materials—their activation with sensitizing impurities, testing and processing upto the stage where these are ready to be coated on Cathode Ray, Television Picture and Radar Display Tubes and so on. It is expected that the demand of TV picture tubes will increase manifolds by the end of Fifth Five Year Plan. Development of indigenous phosphor would, thus, save substantial amount of foreign exchange.

NPL has succeeded in perfecting techniques to fabricate over 30 types of *microwave components* including waveguides, 'T' junctions directional couplers, attenuators, pyramidal horns, twists and bends.

Reflex klystrons are used as sources of microwave power in radar receiver, microwave links, and as a signal source in microwave test-benches. Prototypes of external cavity reflex klystron equivalent to 2K28 for 10 cm wavelength, have been successfully fabricated and batch produced at NPL.

Universal klystron power supply has been developed for operating most of the klystrons from L-band to K-band which require highly stabilised voltages for beam as well as repeller. It has facilities for supplying 6.3 volts a. c. for filaments of the klystrons. The beam voltages and the repeller voltages are continuously variable. The know-how has been released for commercial exploitation.

Modulation unit is a pattern generator with facilities for square wave, saw-tooth, sine and pulse output. When used with the klystron power supply, it modulates the klystron as required. Besides this, it can be used as a function generator for pulse, square wave, saw-tooth and sine wave for other electronics applications. The know-how has been developed in NPL and released to industry.

Know-how has also been perfected for the *fabrication and reconditioning of cathode-ray tubes* type 5 UPl and TV tubes. TV tube is also a special purpose cathode-ray tube of various sizes. TV picture tubes of 23, 29 and 41 cm have been fabricated and tested. 47 cm and 58 cm TV tubes and radar tubes have been reconditioned.

Process know-how has been developed for the indigenous production of *midget electrodes* (carbon electrodes) used in dry cells. All the raw materials like petroleum coke, carbon black, graphite powder, coal tars and pitches are indigenously available. The process has been developed on batch production scale.

The *ultrasonic transducers* developed by NPL can be used in a variety of applications, such as, presence detection, alarm systems, liquid level control, automatic door opener, diameter and length control, positioning, package routing and motor vehicle detection. These are capable of sensing liquids, ferrous or non—ferrous metals, opaque or transparent materials at a wide range of distances. These are resonant type of transducers and can be designed to have any desired fixed frequency in the 25 kc/s to 50 kc/s range. The ambient conditions, such as, humidity, water vapour, fog, smoke or dust laden atmosphere, high or low intensities of light or total darkness do not effect the functioning of the system.

These are but a few illustrations of the achievements of NPL and the general progress in physical research in India. Needless to say that the processes/products developed by NPL and other laboratories have helped the country to conserve foreign exchange through import substitution.

AGRICULTURAL PROGRESS IN INDIAN ECONOMY

Agriculture, being the major sector of the Indian economy, has naturally attracted the prime consideration of Indian planners. The main objective of the Fourth Plan was to create suitable conditions for a sustained increase of about 5 per cent per year over the next decade in the farm sector. During the Plan, a growth rate of about 3.9 per cent per year is likely to be achieved. Not only in the field of foodgrains but commercial crops and horticultural production too, there has been noticeable progress in the country since the concept of planning was evolved. Also the aspects of irrigation, soil conservation, agricultural credit and research have received emphasis in the course of the five-year plans.

In the Fourth Plan, reliance was mainly placed on high yielding varieties for improving the overall production of foodgrains. Out of a total increase of 31 million tonnes that was envisaged in the Fourth Plan in terms of foodgrains production, the high yielding varieties are stated to contribute about 21 million tonnes. The coverage under the high yielding varieties under wheat has particularly recorded substantial growth.

During the Fourth Plan, the annual compound growth rate that is likely to be achieved against the 1968-69 performance will be 2.1 per cent in respect of rice, 10 per cent for wheat, 2.7 per cent for maize, 11.3 per cent for bajra and 2 per cent for pulses. In all, the annual compound rate was of the order of 3.9 per cent as against the targetted rate of 5.6 per cent.

In the context of commercial crop production, the annual compound growth rate likely to be achieved in the Fourth Plan over 1968-69 actuals would be 1 per cent for sugercane 6.6 per cent for oilseeds, 4.8 per cent for cotton and 11.8 per cent for jute. Some of the new programmes envisaged as a result of the mid-term appraisal of the Fourth Plan related to intensive cotton district programme, extension of hybrid-4 cotton; development of cotton in Sunderbans of West Bengal; intensive jute district programme and development of soyabean and sunflower. The impact of these programmes is likely to materialise after the completion of the Fourth Plan.

Under horticulture and minor plantation crops, the Fourth Plan envisaged that the area under orchards would go up by 440,000 hectares from 1.5 million hactares in 1968-69. In addition, an area of 20,000 hectares of existing orchards was to be brought under intensive cultivation measures. Against these targets, it is now estimated that by the end of 1973-74 the area under orchards would rise to 1.8 million hectares and the production level would be 9.2 million tonnes against 8.6 million tonnes in 1968-69. The Plan envisaged the establishment of a Banana Development Corporation and a package programme for banana development covering about 12,000 hectares in coastal areas. The coverage under the package programme is likely to reach 6,000 hectares. Another scheme envisaged in the Plan was to bring an additional area of 4,000 hectares under walnuts for export trade and this target is likely to be reached. In respect of cashew nut the Fourth Plan assumed a base level production of 131,000 tonnes and envisaged an increase of 70,000 tonnes against this base. Actual production in the base year turned out to be 186,000 tonnes and it is contemplated that in the last year of the Fourth Plan a production of 210,000 tonnes may be attained involving an increase of 24,000 tonnes over the actual base year production. With regard to pepper, the Plan contemplated a base level of 23,000 tonnes and targetted for an increase of 19,000, tonnes over the base. Here again, the production turned out to be 24,000 tonnes in the base year. It is estimated that in the terminal year 1973-74, a production level of about 30,000 tonnes would be reached.

If we look at the annual quantum of output, foodgrains recorded 94 million tonnes in 1968-69, 99.5 million tonnes in 1969-70, 108.4 million tonnes in 1970-71, 104.7 million tonnes in 1971-72, 96 million tonnes in 1972-73 and an estimated 114 million tonnes in 1973-74. The production of rice in these respective years was 39.76 million tonnes, 40.43 million tonnes, 42.22 million tonnes, 43 million tonnes, 38.63 million tonnes and 44 million tonnes, wheat 18.65 million tonnes, 20.10 million tonnes, 23.83 million tonnes, 26.40 million tonnes, 25 million tonnes and 30 million tonnes. Production of pulses went up from 10.4 million tonnes to 11.7 million tonnes and 11.8 million tonnes during the period 1968-69 to 1970-71 while it was 11.1 million tonnes in 1971-72 and 10.2 million tonnes in the year that followed. The estimated output for 1973-74 was 11.5 million tonnes. The output of oilseeds in these years was 6 8 million tonnes, 7.7 million tonnes, 9.3 million tonnes, 8.3 million tonnes, 7 million tonnes and 9.4. million tonnes. In terms of gur, sugarcane produced was 12 8 million tonnes, 13 8 million tonnes, 13 million tonnes, 11.7 million tonnes, 12.6 million tonnes and 13.6 million tonnes. Cotton production was 5 million bales (1 bale=180 kgs.), 5.26 million bales, 4.50 million bales, 6.53 million bales, 5.4 million bales and 6.50 million bales. Production of jute was 2.9 million bales, 5.7 million bales, 4.9 million bales, 5.7 million bales, 4.9 million bales and 5.6 million bales. The output of tobacco was 361,000 tonnes in 1968-69 and 409,000 tonnes in 1971-72 and an estimated 370,000 tonnes in 1973-74.

In the field of agricultural research, considerable progress has been recorded in respect of several crops, particularly rice, wheat and cotton. The co-ordinated research projects in dry farming have also picked up momentum. Other highlights of development in the Fourth Plan include the establishment of a central institute for plantation crops during 1972. New schemes of research into humid and high rainfall agriculture were also introduced. The Fourth Plan visualised a target of 3.2 million tonnes of nitrogenous (N), 1.4 million tonnes of phosphatic (P_2O_5) and 0.9 million tonnes of potassic (K_2O) fertilizers. Anticipated progress in fertilizer consumption was of the order of nearly 2 million tonnes in N, 0.4 million tonnes of P_2O_5 and 0.4 million tonnes of K_2O fertilisers. As against the plan target of 80 million hectares for plant protection, the likely achievement by the end of the plan would be about 64 million hectares. In the sphere of agricultural machinery, the plan envisaged a crucial role for agro-industries corporations. During the plan period, such corporations were set up in five states thus covering all the states in the country. The aspects of soil conservation, agricultural credit and marketing were also given due consideration in the Fourth Plan.

The Fifth Five Year Plan (1974-79) envisages 645 million tonnes as against 520 million tonnes of production anticipated in the Fourth Plan as a whole. Of this, the anticipated production of rice would be 254 million tonnes as against 208 million tonnes, while that of wheat would be 168 million tonnes against 126 million tonnes, pulses 65 million tonnes against 55 million tonnes, maize 37 million tonnes against 30 million tonnes, jowar 51 million tonnes against 42 million tonnes, bajra 37 million tonnes against 30 million tonnes, other cereals 33 million tonnes against 29 million tonnes. The output of oilseeds is expected to go up to 55 million tonnes in the Fifth Plan as against anticipated 41.5 million tonnes in the Fourth Plan. Sugarcane production is expected to improve to 775 million tonnes against 635 million tonnes.

For achieving the targets of the Fifth Plan, one of the essential requirements would be that the growth in cropped area must be faster than in the past. During 1960s, the gross cropped area increased at an average rate of nearly 1.2 million hectares per year. During the Fifth Plan about 11.2 million hectares would be through the extension of irrigation and the increase in gross cropped area would be 2.2 million hectares per year. Thus, over the entire Fifth Plan period, the increase would nearly be 11 million hectares of cropped area. This will raise the total gross cropped area from about 169 million hectares in 1973-74 to about 180 million hectares in 1978-79.

For achieving the growth rate in crop yields, a multi-sided effort is to be undertaken in the Fifth Plan. The main element, in the effort would be the intensification of problem-oriented research; strengthening of agricultural extension and administration; expansion of the programme of multiplication and distribution of certified seeds; increase in the consumption of chemical fertilizers and improvement in the efficiency of fertilizer use; water management; expansion in institutional credit; effective operation of an agricultural price policy as also execution of land reform programmes.

The Fourth Plan strategy of agricultural production was mainly based on the exploitation of high yielding varieties of cereals and multi-cropping programme. In the Fifth Plan, the approach is being modified to involve small and marginal farmers in the farm sector. The dry farming technique, experimented in the Fourth Plan is proposed to be applied on a larger scale.

Consumption of chemical fertilizers in 1973-74, the base year of the Fifth Plan, is estimated to be around 1.97 million tonnes of N, 62,000 tonnes of P_2O_5 and 410,000 tonnes of K_2O. By the end of the Fifth Plan, the level of consumption is proposed to be raised to 5.2 million tonnes of N, 1.8 million tonnes of P_2O_5 and a million tonnes of K_2O. Overall growth rate of NPK would be 21.7 per cent per year.

The Fifth Plan has also devised a special programme for selected foodgrain crops. As against wheat production in the entire plan period at about 126 million tonnes, the Fifth Plan target is placed at 168 million tonnes. The bulk of additional wheat production is expected to be contributed by the high yielding varieties programme.

Rice production which is likely to be about 208 million tonnes in the Fourth Plan period is targetted at 254 million tonnes in the Fifth Plan. Here again, the major portion of additional production is envisaged to be contributed by the high-yielding varieties. In respect of pulses, the Fifth Plan envisages significant rise in output—65 million tonnes against 55 million tonnes of the Fourth Plan envisaged.

Under the Special programmes for commercial crops, attainment of self-sufficiency in edible oils is being aimed at and a big step-up in oilseed production is contemplated—55 million tonnes in the Fifth Plan against 41.5 million tonnes in the Fourth Plan. The research effort in respect of oilseeds is also to receive increased emphasis during the Fifth Plan by developing oil seed production technology for rainfed areas, evolution of drought-resistant varieties, improved fertilizer application and intensification of research on sunflower, safflower and niger.

For sugarcane production, the Fifth Plan target is 775 million tonnes against 635 million tonnes likely to be achieved in the Fourth Plan.

As regards cotton, the Fifth Plan target is postulated at 36 million bales against 28 million bales in the Fourth Plan. To achieve this target, the area under irrigated cotton is sought to be increased to about 2 million hectares and the yield is to improve from about 320 kgs. to about 450 kgs. per hectare, the yield of rainfed American cotton is to be improved from 135 kgs. to 225 kgs. per hectare and the yield of desi cotton from 70 kgs. per hectare to about 90 kgs. per hectare. These improvements that are envisaged are not unreasonable. India today has the largest area planted in the world cotton crop but the yield per hectare is among the lowest. In recent years, significant results have been obtained in cotton research. During 1968-72, 15 new cotton varieties have been released. Of this, hybrid-4 cotton, MCU-5 constitute significant milestones in cotton research. Alongside research efforts, cotton development programmes are also to receive priority in the Fifth Plan.

Likewise in the field of jute and mesta, the estimates now range between 7 to 8 million bales for the terminal year of the Fourth Plan. The Fifth Plan target is proposed to be at 66 million bales against an anticipated 32 million bales in the entire Fourth Plan. The strategy in the Fifth Plan would be to undertake intensified development in concentrated areas combined with extension of irrigation to those areas. An intensive jute district programme is also initiated in the Fourth Plan covering three districts of West Bengal, and one district each in Orissa, Bihar, Assam and Andhra Pradesh. By the end of the Fifth Plan, an area covered by this programme is to be extended to 400,000 hectares of which 150,000 hectares would be irrigated and the rest rainfed.

The Fifth Plan also envisages special programmes for horticulture and minor plantation crops. It is targetted that fruit production will be raised to an annual level of 10.2 million tonnes against the 1973-74 production of 9.2 million tonnes (estimated). Alongside programmes for increase in production, stress is to be laid on improving market facilities through suitable developmental infrastructure, such as, transport packaging and processing arrangements. By the end of the Fifth Plan, cashew nut production is expected to rise to 280,000 tonnes per year as compared to 210,000 tonnes in 1973-74.

The aspects of animal husbandry and dairying, fisheries, forestry and land reforms have all received due emphasis in the formulation of the Fifth Plan. ☐

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AERONAUTICS EARN FOREIGN EXCHANGE

M/s. Hindustan Aeronautics Limited (HAL), Indian Express Building, Vidhana Veedhi, Bangalore-1 earned foreign exchange at a value of nearly Rs. 2 million in 1972-73 by undertaking overhaul and service activities and exporting components to their collaborators. It is currently exploring possibilities of exporting aircraft and aero-engines abroad.

Over the years of its existence, HAL developed a surprising range of production which includes aircrafts, helicopters, associated equipment and accessories. Its activities range from licensed production to design and manufacture to repair and overhaul of aircraft and aeronautical equipment. It designed and developed a variety of aircraft–HF-24 'Marut' Mark I Supersonic fighter, HF-24 'Marut' Mark I trainer, HJT–16 'Kiran' Basic Jet Trainer and HA-31 'Basant' Agricultural Aircraft. Besides a number of trainer aircrafts of different designs were also developed by HAL.

HAL is currently engaged in the manufacture of Gnat Transonic Fighter aircrafts in collaboration with France, HS-748 Transport Aircrafts in different versions in collaboration with a well renowned firm in the U.K., MIG-21 Supersonic Interceptor in various versions in collaboration with USSR, Alouette-3 Helicopter in different versions and also SA-315 'Cheetah' helicopter, both in collaboration with France.

Apart from aircrafts, HAL also manufactures power plants and avionic items designed and developed by its own engineers and technicians. In the area of power plants, its manufacturing range covers HJE-2500 turbo-Jet Engines, HPE-2 Six-Cylinder Piston Engines of 250 h.p. power rating and HPE-4 Eight-Cylinder piston engines of 400 h.p. power ratings. Besides, in collaboration with U.K., France and U.S.S.R., it manufactures jet engines in different ratings. In the field of Avionic items, HAL turns out IFF and VHF Communication equipment, automatic direction finders, radio altimeters and radio beacons. All these have been designed and developed by HAL itself while other equipment, such as, VHF, radar, radio compass, radio altimeter (with Russian collaboration) and other radar equipment (with Czech and Italian collaboration) are also produced by it.

It has also undertaken manufacture of a wide range of forgings and castings to aeronautical specifications, both in light alloy and heat resistant steel.

HAL's future product development plans include design and development of an Advance Strike Aircraft Weapons Systems which is expected to be operational in the 1980s. It has currently on hand development work on microwave antenna, a procedure trainer and improved engine test facilities.

HAL presently has six establishments spread over the country : at Bangalore for the manufacture and overhaul of aircrafts including helicopters and aeroengines; at Nasik for the production and overhaul of MIG aircrafts; at Koraput for the manufacture and overhaul of MIG engines; at Hyderabad for the production of avionic equipment for MIG, radio, radar, industrial TV and other electronic components; at Kanpur for the manufacture of HS-784 transport aircrafts and at Lucknow to produce wide range of accessories for all helicopters and aircrafts.

'SICK' TEXTILE MILLS ACTIVE IN EXPORT TRADE

The 'sick' textiles mills taken over by Indian Government sometime back are no longer what they were and they have not only recognised their manufacturing capability but have come to contribute India's export trade. These mills under the management of Maharashtra Textile Corporation Limited, Bombay, earned foreign exchange to the tune of Rs. 67.96 million in 1972-73 through exports of textile cloth and yarn. During the first nine months of 1973-74 (April-December 1973) their exports earned as much as Rs. 93 million as compared to only Rs. 35 million during the corresponding period of the preceding year. During the entire year of 1973-74, the Corporation expects to export worth Rs. 120 million, registering 100 per cent increase over the export value in the previous year.

The production range of the mills under the Corporation covers coarse, lower medium and higher medium varieties of cloth. These mills produced cloth to the tune of about 344 million metres during 1972-73 while the production of market yarn was of the order of 5.50 million kgs. Their sales turnover for cloth and yarn during the year was estimated at Rs. 655.37 million.

The Corporation has under its management 24 textile mills including sick textile undertakings (1972-73). It is the custodian of these mills on behalf of the Government of India. It has active plans

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for renovation and modernisation of machinery of the sick mills. At domestic level, the mills have opened as many as 15 retail shops all over the Maharashtra State through which controlled as well as non-controlled cloth is made available directly to consumers at reasonable prices. In the field of exports, the Corporation's future plans include organising an Export House for channelising the exports of all the member mills with an objective to get better prices and more foreign exchange earning.

India's export trade in cotton manufactures including textile yarn and threads secured foreign exchange at a value of Rs. 1635 million during 1972-73 as compared to Rs. 1281.72 million in 1971-72 and Rs. 1319 million in 1970-71. Of the total export realisation during 1972 73, cotton manufactures fetched Rs. 1267 million while the share of textile yarn and thread was of the order of Rs. 371 million.

The textile industry offers a wide range of items in the line which broadly includes sarees, lungis, dhoties, shirtings, handkerchiefs, bedtickings, mill-made piece-goods, furnishlng cloth, poplin broadcloth, twill, satin, umbrella cloth, voils, mulls, flannelite, coating, suiting, newar, ribbons, embroidered cloth made of cotton, imitation leather cloth, cotton fabrics coated with artificial plastic materials, insulated tapes, carded cable rope twine of cotton, made up articles wholly or chiefly of cotton, tarpaulin tents, handloom rugs, mill-made cotton waste blankets, bed sheets of different types, powerloom counterpanes, table cloths, pillow cases, towels of handloom and powerloom, cotton bed liner, curtains, mosquito nets, handloom durries and carpets and a comprehensive range of other items in the line.

A well diversified range of markets which includes developing as well as developed countries purchase Indian textiles in growing volume every year. Among these, the prominent countries accounting for bulk purchases are U S S R., U.S A., Yugoslavia, France, Bangladesh, U K , Kuwait, Canada, Singapore, Sweden, Dubai, Mauritius, Federal Republic of Germany, Saudi Arabia, Zambia, Uganda, Nigeria and Poland.

In the area of textile yarn and thread, the industry supplies overseas silk yarn and thread, yarn of wool and animal hair, cotton yarn and thread of various types, yarn and thread of synthetic fibres, regenerated fibres and textile fibres. U. K., Poland, France, Bangladesh, Netherlands, Czechoslovakia, New Zealand, U.S.A., Austria, A.R.E., Australia, Singapore, Sudan, Nigeria, Burma and Nepal are the leading markets.

RAILWAY SLEEPERS TO BANGLADESH

Recently, M/s. Vikas Enterprises, Calcutta, have bagged a sizeable contract from Bangladesh for the supply of wooden sleepers at Rs. 20 million. The contract was won against a global tender floated by the Government of Bangladesh. In the face of stiff competition of major timber producing countries like Nepal, Thailand and Malaysia, the Indian firm achieved the tender. In terms of quantity, the order is for over 900,000 cubic feet of wooden sleepers. The supplies are to be effected during the next 12 months and the order is exported to be increased further.

India exported rails and railway track construction materials of iron and steel worth Rs. 11.96 million in 1972-73. In fact, the exports in the preceding year were as much as Rs. 88 20 million as compared to Rs. 65.25 million in 1970-71.

During 1972-73, rails secured Rs. 6.84 million while sleepers and other railway track materials brought in Rs. 5.12 million. Burma with an intake of 5083 tonnes purchased rails at Rs. 3.73 million. Arab Republic of Egypt was the next best buyer which bought 4200 tonnes at a cost of Rs. 2.93 million. Bangladesh was another destination.

Sleepers and other railway track materials were mainly imported by Iran which sought 1762 tonnes at over Rs 4 million, accounting for the bulk of supply. Burma, Bulgaria, Bangladesh and New Zealand were prominent among other buyers.

Besides the railway track materials made of iron and steel, the country also supplies wooden sleepers to overseas markets. During 1972-73, Iran and Bangladesh were the principal importers.

EXPORT SUCCESS OF A REFINING FIRM

Basically a refining unit, M/s. Burma Shell, Bombay, have come to secure export orders for a number of traditional and non-traditional products in addition to their main line of activity, viz. refining. During 1973, the firm exported a variety of items like drilling additives, chemicals and a range of engineering products to fetch over Rs. 3.30 million in foreign exchange. They have been granted permission by the Reserve Bank of India to export Indian goods to their associate firms in Gulf countries.

In tune with the Government of India's policy for diversification of export trade, a number of firms are coming forward to contribute their endeavour in undertaking exports of those manufactures which are not in the direct range of their production. In fact, many of the manufacturing concerns are, in recent years, acting as 'Export Houses' besides managing their main line of activity.

ELECTRICALS ON EXPORT STREAM

Emergence of electrical industry in the post-independence period and the rapid progress achieved in the later decades enabled India to join the select group of nations which are in the forefront in this line of manufacture.

Among a number of firms that contributed their endeavour in the development of the industry, M/s. Philips India Limited, Philips House, Justice Chandra Madhab Road, Calcutta-20 deserve mention. During 1971-72, the firm exported electric and electronic items to the tune of over Rs. 10 million. Its products are sought by a wide range of countries. Over the years of its existence, it has developed markets in Europe, West Asia and Far East for radios, lamps, accoustic and electronic measuring instruments and electronic components.

The production profile of the firm covers a comprehensive range of products, such as, incandescent, fluorescent, mercury and sodium lamps, fluorescent powder, light fittings, light accessories, radio receivers—both mains and transistor models, record players, public address equipment, electronic measuring instruments, glass shells and glass tubings for lamps, light fitting accessories, such as, lamp holders and welding electrodes. The firm has seven manufacturing plants in the country - two located at Calcutta, three in Bombay and two in Poona.

With the increased production turnover, the firm has achieved import substitution for a number of products. It was able to reduce import content drastically in every area of manufacturing activity. Today, the value of import content in the overall cost of production is hardly 4.2 per cent. Aside this, the firm is helping small and medium scale firms in the line by way of sub-contracting components, piece parts and sub-assemblies. It extends active help to these ancillary units by way of providing them production techniques and related information for the manufacture.

India's exports of electric goods during 1972-73 were of the order of Rs. 234.30 million as compared to Rs. 186.75 million in 1971-72. The export range of the electric goods industry covers electric power machinery and switchgear, equipment for distributing electricity, telecommunication apparatus, domestic electric equipment, electric apparatus for medical purposes and radiological apparatus and other electrical machinery and apparatus.

EXPORT PERFORMANCE AND POTENTIAL

CHEMICALS AND ALLIED PRODUCTS

EXPORT TARGET SURPASSED

Export of Indian chemicals and allied products indicate a rising graph. They earned Rs. 265.5 million in 1968-69, Rs. 318.5 million in 1969-70, Rs. 378.8 million in 1970-71, Rs. 333 million in 1971-72 and Rs. 407 million in 1972-73. The exports during 1972-73 have surpassed the target fixed for the year at only Rs. 383 million.

'Chemicals and allied products' include a wide range of products ranging from tyres to turpentine, fireworks to furniture, books to beltings, ceramics to cones, plywood to publications, refractories to rubber products, paints to paper, glass to greeting cards, cork to crushed bones and so on.

Paints and allied products have recorded an export increase of about 50 per cent in 1972-73 (Rs. 57.2 million) over 1971-72 (Rs. 37.6 million). Items primarily responsible for this increase are chrome and zinc pigments, wire enamels, synthetic enamels and printing inks. Principal customers for these products were: Argentina, Brazil, Hong Kong, U.S.A., U.S.S.R., Abu Dhabi, Iran and Nepal.

Ceramics and allied products accounted for Rs. 13.43 million in 1972-73 as against Rs. 8 6 million in 1971-72. Bulk of exports (70 per cent) in this category was occupied by sanitaryware (Rs. 1.5 million in 1971-72 and 2.1 million in 1972-73), insulators (Rs. 0.03 million and 1.2 million) and asbestos cement products (Rs. 2.1 million and Rs. 5.1 million).

Glass and glassware has nearly doubled its export trade from Rs. 19.4 million in 1971-72 to Rs. 37.4 million in 1972-73. The category includes glass bottles, phials, safety glass sheets, sheet and figured glass, mirrors, vials, vacuum flasks and refills, scientific glassware, lampwares and clinical thermometers. Vacuum flasks and refills (Rs. 10 million in 1972-73 against Rs. 7.03 million in 1971-72), bottles and phials (Rs. 5.51 million against Rs. 2 million), figured and wired glass (Rs. 7.2 million against Rs. 1.8 million) and glass bangles (Rs. 0.8 million against Rs. 0.2 million) have fared well particularly.

Export of paper and paper boards registered an increase from Rs. 19.9 million in 1971-72 to Rs. 28 2 million in 1972-73. The export of writing and printing paper has, however, been restricted by the Government of India recently.

In 1971-72 the value of books and publications exported was of the order of Rs. 14 million whereas in 1972-73 it rose to Rs. 15.4 million.

There was a marginal increase in export of refractories and processed minerals from Rs. 32.8 million in 1971-72 to Rs. 36.6 million in 1972-73. Barytes (Rs. 7.5 million in 1972-73), bentonites (Rs. 0.98 million), refractories (Rs. 4.9 million) and calcined bauxite (Rs. 4.6 million) were the items responsible for the increase in exports in this category.

Rubber manufactured products also registered a nominal increase from Rs. 14 million in 1971-72 to Rs. 14.2 million in 1972-73. In this category, cycle tyres and tubes, however, showed a sizeable rise from Rs. 4.7 million in 1971-72 to Rs. 5.5 million in 1972-73.

Bangladesh was supplied with Rs. 6.7 million worth of urea out of a total export figure of Rs. 65.8 million for fertilizers in 1972-73. The export of crushed bones increased from Rs. 51 million in 1971-72 to Rs. 53.5 million in 1972-73. Safety matches is another item which revealed increased export performance. The attainment was of the order of Rs. 7.4 million in 1972-73 as against mere Rs. 0 6 million in the preceding year. Detonaters, explosives, safety fuses, plywood and allied products also showed increase in exports during the year under review.

ONIONS EARN FOREIGN EXCHANGE

A nearly Rs. 27 million export market was secured by onions from India during 1972-73. In terms of quantity, the export was of the order of 52 million kgs. Over twenty overseas markets were in the list of importers for the item.

Malaysia and Singapore were the most important markets for onions. They imported worth Rs. 8.4 million and Rs. 7 million respectively in the year. Quantumwise their import was 14.7 million kgs. and 12.2 million kgs. respectively. Kuwait was another important market having imported 14.9 million kgs. of the vegetable at a cost of Rs. 6.33 million. Bahrein Islands, Nepal, Dubai, Qatar, Seychelles, Yugoslavia and Saudi Arabia were among the other markets.

In the first quarter of 1973-74, the export earning of the product was of the order of nearly Rs. 1 million (15 million kgs). Besides Malaysia and Singapore, Yugoslavia, Kuwait and Italy proved to be the major buyers.

The entire group of vegetables fetched Rs. 52 million during 1972-73 as compared to nearly Rs. 47 million in 1971-72.

ESSENTIAL OILS FOR EXPORT

Sandalwood oil, lemongrass oil and palma rosa oil are the major varieties of essential oils that are exported from India to the world markets. The export trade in essential oils and resinoids has fetched Rs. 40 million during 1972-73. In the preceding year, the export value was about Rs. 39 million.

Sandalwood oil alone was exported to the tune of Rs. 28 million during 1972-73. U.S.A. was the most important market at a value of about Rs. 10 million. The U.K., and Soviet Union imported worth Rs. 3 million and Rs. 2 million respectively in the year while Switzerland, Japan and Netherlands were the other important markets. France was also one of the leading buyers and it imported worth Rs. 4.5 million.

Nearly Rs. 9.5 million worth of foreign exchange was earned by the export of lemon grass oil. U.S.S.R., absorbed the bulk at Rs. 6.6 million. U.K., Hungary, U.S.A., German Federal Republic, Australia and Czechoslovakia were among the other customers.

Over Rs. 1 million worth of palma rosa oil was exported in the year, with the U.S.A. and Sudan as the major importers.

In addition to the three varieties mentioned above, certain other categories of essential oils are also active in India's export trade including eucalyptus oil, vetiver oil, clove oil, ginger oil and keora oil.

SEAFOOD EXPORTS IMPROVE

The value of India's exports of seafood products for the first seven months of the year 1973-74 (April-October 1973) was of the order of Rs 489 million as compared to Rs. 353 million in the corresponding period of the last year (April-October 1972). This would reveal an improvement of over 38 per cent.

Frozen shrimp, frozen froglegs and canned shrimps were the principal items in the export trade. Two-thirds of marine exports from India were in the direction of Japan. The offtake by the U.S.A. was nearly 20 per cent. The U K. accounted for 3.32 per cent. The target set for exports during the year 1973-74 is Rs. 650 million. On the basis of export trend so far, the target is likely to be fulfilled.

The Seafood industry has maintained a steady growth in exports which were Rs. 414 million in 1971-72 and Rs. 538 million in 1972-73.

India offers a wide range of marine products for export which include canned lobster tails, canned fish, dried prawns, shark fins, fish, maws, prawn bits, shrimp powder, fish pickles, prawn pickles, fish oil, cuttle fish bones, beach—de—mer, sea shells, tortoise shells, aquarium fish, tuna fish, tortoise meat, turtle meat, fish manure, white squids, saw fish beaks, fish meal and turtle.

Seafood products of India are mainly exported to Japan, U.S.A., U.K., Australia, France, Singapore, Hong Kong, Federal Republic of Germany, Belgium and Netherlands.

TRADE PATTERN WITH NEIGHBOURING COUNTRIES

While there is no trade with Pakistan since 1965, India enjoys close trade relations and economic cooperation with all the neighbouring countries. The total volume of trade with six neighbouring countries, namely, Afghanistan, Bangladesh, Burma, Iran, Nepal and Sri Lanka improved from Rs. 2,177 million in 1968-69 to Rs. 3,959 million in 1972-73. Indian exports to these countries rose from Rs. 888.9 million to Rs. 2,430 million in the respective years while her imports from them increased from Rs. 1,288 million to Rs. 1,529 million. With a view to expanding trade and closer economic and commercial cooperation, India has entered into trade agreements with all these countries.

In 1972-73, Indian exports to Afghanistan amounted to Rs. 125 million while her imports were of the order of over Rs. 160 million. The exports to Bangladesh amounted to Rs. 1,583 million and imports there from were at Rs. 31.50 million. In respect of Burma, Indian exports were of the order of Rs. 43.60 million while imports totalled Rs. 18 50 million. The export trade with Iran was in the neighbourhood of Rs. 250 million while the import bill was as much as Rs. 1,250 million. With Nepal, the export value totalled Rs. 351 million and imports Rs. 95 million. Sri Lanka's imports from India in the year reviewed totalled Rs. 80 million while Indian imports from that country stood at Rs. 9 million.

India's export trade with Iran, Bangladesh, Nepal and Afghanistan has shown a rising trend in recent years. With Sri Lanka, it revealed an uptrend till 1970-71 but since then there has been a decline mainly owing to the foreign exchange difficulties of Sri Lanka. India's export performance to these countries during 1972-73 would have been better but for factors, such as, shortage of items like iron and steel, cotton, rayon and sugar.

It has been India's constant endeavour to maintain and strengthen close trade relations with the neighbouring countries, both at the Government level and through international forums. Besides the trade agreements with Sri Lanka, Bangladesh, Burma and Afghanistan, a long term Treaty of Trade and Transit has been concluded with Nepal. Also a Joint Committee on Economic Cooperation has been set up with Sri Lanka. A Similar Joint Committee already exists in case of Iran. India has also been regularly participating in the annual intra-regional trade promotion talks held under the auspices of the Economic Commission for Asia and Far East.

The first ever Trade Agreement with Bangladesh which was concluded in March, 1972 expired in September 1973 and a new trade agreement with a validity for three years' period in the first instance was concluded in July 1973. The agreement provides for two-tiers of trade, namely, balanced trade and payments arrangement in specified commodities of specified interest to the two countries and trade outside the balanced trade and payments arrangement which is regulated in accordance with the normal import, export and foreign exchange regulations.

Trade between India and Nepal is regulated in accordance with the provisions of the Trade and Transit Treaty which came into effect in August, 1971 and is valid for a period of five years, renewable for a further period of five years subject to mutual consent. The treaty aims at expansion and diversification of mutual trade of goods produced in their territories. The Indo-Nepal Joint Review Committee set up by the two countries meets periodically to secure effective implementation of the provisions of the treaty.

STEEP RISE IN EXPORTS TO LIBYA

India's exports to Libya during the first six months of 1973 have shown an increase of nearly 580 per cent over the same period last year. During January-June 1973, India exported goods worth Rs. 27.10 million as against only worth Rs. 0.46 million in the same period in 1972.

Main items of exports to Libya were steel pipes, structural angles, manhole covers, textile machinery and accessories, tobacco, tea, aluminium conductors, towers, control switchgears, cables, jute bags, 5 HP diesel engines, turmeric, handicrafts and textile fabrics. The number of items exported to Libya has also gone up from 50 in 1972 to 115 in 1973.

For the first time, India has made a breakthrough in the supply of drugs and medicines in the markets of

Libya. The orders have been placed with Indian firms as a result of State Trading Corporation's participation in global tenders.

There is now a monthly sailing service between India and Libya extended by the Shipping Corporation of India.

POWER GENERATION IN INDIA

By 1973-74, Indian economy is anticipated to have an installed power generating capacity of 18.9 million kw. This achievement should be viewed against a meagre 2.3 million kw. installed at the pre-First Five Year Plan stage, 3.4 million kw. by the end of the First Five Year Plan (1951-56), 5.56 million kw. by the end of the Second Five Year Plan (1956-61), 10.17 million kw. by the end of the Third Five Year Plan (1961-66) and 14.29 million kw. by the end of the three annual plans during 1966-69. In the Fourth Plan alone (1969-74), actual addition to the installed generating capacity was as much as 4.58 million kw. Of this, the share of hydro-power was 1.06 million kw. while that of thermal power was 2.94 million kw. and nuclear power 0.58 million kw.

In the Fourth Plan period, the commissioning of Tarapur Station in 1969 was of significance in the nuclear development programme and the country became the ninth nuclear nation in the world. Commissioning of two units of Ranapratap Sagar Atomic Project (470 million kw.) and one unit of 220 million kw. in Kalpakkam station was anticipated in the Fourth Plan. One unit in the Ranapratap Sagar Project is presently undergoing trial runs and is expected to be in commercial operation soon while the second unit is expected to go on stream in 1975.

It is proposed to add 16.55 million kw. of new capacity for power generation during the Fifth Plan with 33 million kw. capacity in effective operation in the last year of the Plan. Of the 16.55 million kw. of new capacity, hydro-power is expected to be 6.42 million kw., thermal power 9.42 million kw. and nuclear power 0.71 million kw.

While the number of irrigation pumps anticipated to be energised by 1973-74 will be 2.43 million, it is expected to increase to 4 million by the end of 1978-79. Of 566,880 villages in India, the number of electrified villages as anticipated by 1973-74 will be 148,150 while the village electrification programme envisages electrifying 258,363 villages by 1978-79.

India has vast hydro resources totalling about 41 million kw. capable of yielding about 215 billion kwh. energy per year. It is expected that by the end of the Fifth Five Year Plan about 8.8 per cent of this will have been harnessed to generate about 46 9 billion kwh in 1978-79. The long gestation period of hydro schemes (8 to 10 years) and the large outlays required for exploiting them prompted the planners in the country to allocate a comparatively low priority to the hydro-schemes in the Fifth Five Yaer Plan. For catching up with the increasing power demands, short term measures are to be adopted and this has given rise to thermal stations in hydro rich regions.

The Fifth Plan programme of nuclear power generation comprises of the commissioning of the second 235 MW unit in Rajasthan Atomic Station and two units of 235 MW each in the Kalpakkam station in Tamil Nadu. The Department of Atomic Energy proposes to commence work on a new nuclear power project at Narora in Uttar Pradesh where achievements will accrue in the Sixth Five Year Plan. The Atomic Energy Commission is concentrating on the construction of a prototype 40 MW Fast Breeder Thermal Reader (FBTR) at Kalpakkam. In this project, plutonium and thorium are proposed to be used, thorium being converted into fissible material in the process. The Commission proposes to prove the prototype during the Fifth Plan period and develop large capacity (500 MW) reactors during the 1980s.

With the successful implementation of various power programmes in the country, the power position is expected to be satisfactory in the second half of the Fifth Plan period.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

RADAR MANUFACTURE— A STEP AHEAD

With the commissioning of the second unit of M/s. Bharat Electronics Limited (BEL), at Ghaziabad in Uttar Pradesh, India will be entering into an advanced stage in radar production.

The Rs. 110 million Ghaziabad unit will commence production of equipment, known as air defence ground environmental system (ADGES). In the total range of equipment, only one item–three dimensional radar–will be manufactured with foreign technical assistance from M/s. Thomson CSF of France. The rest of the items have been developed and will be produced by BEL itself at its Ghaziabad plant.

The radar system to be produced by the Ghaziabad unit will involve manufacture of three dimensional radar (Static and mobile), secondary radars, troposcatter communication equipment and associated computor systems for data extraction and exploitation. All these items will be manufactured at the standards specified for similar items produced abroad by advanced countries.

The plant's production value in the first year of its operation is estimated at Rs. 90 million but is estimated to go up as much as Rs. 170 million in the next few years. Apart from manufacturing ADGES, the plant has a capacity to commence production of air traffic control and other equipment, such as, microwave equipment.

The comprehensive range of electronic products of BEL (Bangalore) covers sophisticated products, such as, communication equipment, TV tarnsmitters and equipment, radars and a sizeable number of components in the line. BEL is progressively diversifying its activities to undertake new types of assignments. Recently, it secured a turnkey job for establishment of a microwave communication system linking Barauni with Kanpur and Haldia. The Ghaziabad unit of BEL will be associated with the assignment for systems engineering and installation.

Apart from meeting the requirements of electronic-based items of various sectors of Indian economy, BEL, is equally active in the area of exports too. During 1972-73, its exports rose to a record level of Rs. 10 million mark from only Rs. 600,000 in 1971-72. Its production during 1972-73 was estimated at Rs. 391.10 million, registering 19 per cent increase over the production in the preceding year. Of the total production, main equipment accounted for Rs. 279 million while the share of components was of the order of Rs. 112 million. In the year, the production of equipment and components based on its own designs was valued at Rs. 88 million while that based partially on collaborator's design and partially on its own was estimated at Rs. 60 million.

FISHERIES-RETROSPECT AND PROSPECT

Against the level of 1.5 million tonnes in 1968-69, fish production in India is likely to be of the order of 2.27 million tonnes by 1973-74 - 784,000 tonnes from the inland sector and the rest from marine resources. The output is expected to reach 3.10 million tonne mark by 1978-79.

Mechanisation of boats has been the major programme undertaken in the marine sector. There were about 7,000 such boats by 1968-69. The Fourth Plan (1969-74) proposed to introduce another 5500 mechanised boats. After making allowance for the number of boats that are likely to be decommissioned, it is estimated that there would be 9300 boats in operation by 1973-74. For off-shore and deep sea fishing about 75 trawlers were introduced during the Fourth Plan period. The plan also visualised the establishment of deep sea fishing stations and the procurement of survey vessels. By 1972-73, 13 vessels were received and bases at Port Blair, Calcutta and

Kandla were set up. While 8 more vessels are likely to be added in the last two years of the plan, additional survey bases at Veeraval, Goa, Mangalore, Madras and Paradeep are expected to be functional by 1973-74.

The Fourth Plan also provided for landing and berthing facilities, both at major and minor harbours. It envisaged the setting up of 10 composite refrigeration plants, 73 ice plants and cold storages and introduction of 20 refrigerated rail vans. All the targets are likely to be achieved.

The fisheries sector is to receive a special boost in the Fifth Plan. Not only the annual level of fish production is sought to be stepped up, but the socio-economic conditions of fishermen as also the employment potential of the fisheries sector are to be improved and the system of fish marketing is also to be improved.

In the inland fisheries sector, the ultimate production potential of fish is estimated at 3.5 million tonnes. While the achievement in the Fourth Plan would be 784,000 tonnes, against 620,000 tonnes in 1968-69, the Fifth Plan contemplates an additional increase of 270,000 tonnes. Of this 175,000 tonnes are sought to be increased by the adoption of intensive fish culture methods in water areas which are already under fish culture. By intensive methods, it is proposed to increase the production from about 600 kg. per hectare to about 900 kg. per hectare annually. The Fifth Plan also endeavours to improve the design of country-boats, encourage extensive use of synthetic twine and provide for ice and cold storage facilities as also fish curing yard at various centres.

As regards mechanised fishing in coastal areas, the Fifth Plan target is to add 4750 such boats throughout the country to the estimated 9300 boats already in operation.

In regard to deep sea fishing, a three-pronged approach is to be followed in the Fifth Plan, namely, enlargement of survey and exploration efforts, introduction of adequate number of large fishing vessels and development of fishery harbours along with ancillary facilities of processing and marketing. So far, fishery resources have been effectively surveyed only to a depth of 25 fathoms. The work of fishery survey is to be further extended in the Fifth Plan. For commercial deep sea fishing, it is proposed that about 200 additional large fishing vessels will be introduced in addition to about 100 such vessels likely to be available by the end of the Fourth Five Year Plan.

The Fifth Plan targets for the year 1978-79 have been placed at 13,300 numbers for mechanised boats in operation against 9300 numbers in 1973-74; 300 large fishing vessels against 100 vessels; 53 refrigerated insulated rail vans against 12 such vans in 1973-74, 4257 million spawn against 1888 million; 1215 million fry and finger-lings against 483 million and 1780 hectares of nursery area against 923 hectares.

The aspects of fish processing, marketing and transport as well as fisheries research, education and extension are also to receive due importance in the Fifth Five-Year Plan.

PROGRESS IN SHIPPING

Indian shipping tonnage was sought to be increased from 2.14 million GRT in 1968-69 to 3.50 million GRT in 1973-74 by which year another 0.5 million GRT was to be on order. This improvement was expected to raise the share of Indian shipping tonnage in the country's overseas trade from about 15 per cent to about 40 per cent by the end of 1973-74. The net operative shipping tonnage is, however, expected to reach about 3 million GRT while an additional tonnage of about 1.8 million GRT is expected to be on order. This will enable the country to have an operative tonnage of more than 4 million GRT in the early years of the Fifth-Five Year Plan. The country's shipping tonnage has come to handle about 20 per cent of her overseas trade in recent years. Further, a part of the tonnage has been engaged in cross trading operations.

The foreign exchange position of Indian shipping in 1971-72 would indicate that four major shipping companies owning about 75 per cent of the total Indian shipping tonnage earned about Rs. 530 million after repayment of instalments of foreign loans and interest thereon.

A target of 8.6 million GRT has been fixed for the country's shipping tonnage by 1978-79, the terminal year of the Fifth Plan, as against 2.65 million GRT as in 1972-73. Categorywise, tankers are to contribute 1.37 million GRT by 1978-79 as against 0.26 million GRT in 1972-73, tramps 1.05 million GRT as against 0.322 million GRT, liner vessels 2.06 million GRT against 1.03 million GRT, bulk carriers 3.56 million GRT against 0.84 million GRT and coastal vessels 0.60 million GRT against 0.20 million GRT.

With the attainment of the shipping tonnage target envisaged for the Fifth Plan, the country's shipping tonnage is expected to be adequate enough to carry 100 per cent of her overseas trade in crude oil and petroleum products, 50 per cent of iron ore exports to Japan, 100 per cent iron ore exports to Europe and about 50 per cent of the liner trade in other commodities.

The Fifth Five Year Plan includes a provision of Rs. 2,430 million to be advanced to the Shipping Development Fund Committee for extending loans to shipping companies for requisition of ships. This would include a spill over provision of Rs. 376 million from the Fourth Plan period.

Promotion of coastal shipping has also received close attention in the formulation of the Fifth Plan. The development of Haldia docks as an ancillary to Calcutta port is supposed to be a significant development in this regard. In view of heavy traffic expected by railways, coastal shipping is to be resorted to, provide relief to railways by taking over the long lead to movement of coal from West Bengal and Bihar coalfields along the coast of India to Southern and Western India.

PLANS FOR TOURIST DEVELOPMENT

The aspect of tourist promotion has been receiving due consideration in India's planned efforts towards economic development. Within five years since 1968, the foreign tourist traffic into the country has doubled —from about 200,000 (1968) to about 400,000 (1973). The tourist traffic is expected to increase to the level of 800,000 in 1978.

In the Fourth Five-Year Plan a provision of Rs. 360 million was made for the development of tourism in the plans of the Central and State Governments. In the Central Plan the provision mainly related to loans to the hotel industry and integrated development of Kovalam beach resort near Trivandrum and Gulmarg hill resort in Jammu and Kashmir.

The main emphasis in the Fifth Plan would be on the provision of additional accommodation for tourists. New accommodation to be built in this plan will be largely in the 1 to 3 star categories of hotels rather than 4 to 5 star hotels. A provision of Rs. 1,130 million has been made for the development of tourism in the plan.

During the Fifth Plan the Central Programme will be mainly in regard to the Central Department of Tourism and India Tourism Development Corporation. Among the major schemes included in the tourism Department plan is the development of selected beach and mountain resorts such as Kovalam, Goa, Gulmarg, Kulu and the U.P. Hill Areas in Uttar Pradesh. Places of cultural importance and wild life will also be developed in the plan period.

The India Tourism Development Corporation proposes to take-up the construction of new hotels, the renovation and expansion of existing hotels and construction of motels as well as traveller lodges. The transport service provided by the Corporation are also sought to be improved. The existing dutyfree shops at international airports of the country will also be expanded.

In the State-sector, the tourism plan will lay emphasis on the development of places of local or regional importance. The main programmes in this sector will be provision of accommodation for middle income group people, transport, beautification and places of tourist importance and provision of basic facilities like water supply, toilet facilities and electricity.

RECENT FOREIGN EXCHANGE REGULATIONS

The Reserve Bank of India has recently issued certain directives requiring that foreign parties should obtain its permission to deal with immovable property within India, that Indian parties should also take its permission to hold immovable property abroad, that foreign parties as well as Indian interests abroad should obtain its permission to carry on business in India and that foreign parties cannot accept agencies within India without its permission.

Related to the first aspect above, Reserve Bank of India issued its directive to the effect that foreigners or foreign companies in India should obtain its permission to acquire/dispose or transfer any immovable property within the country.

Applications for acquiring, holding, transferring or disposing of any immovable property in India by foreign companies and foreign citizens are required to be made in the prescribed form to the Controller, Exchange Control Department, Reserve Bank of India, Central Office, Bombay.

The RBI has also directed that Indian citizens or company, registered and incorporated in the country can acquire, hold, transfer or dispose of any immovable property situated outside the country without its permission. Under the directive, persons, firms or companies already holding immovable property abroad should declare the holdings to the aforesaid authority in the Bank.

The RBI has further directed that all persons resident outside India (including Indian citizens), foreign residents in India and companies (other than banking companies) which are incorporated abroad or in which the non-resident interest is more than forty per cent, as well as branches of such companies, are required to obtain its permission for carrying on in India any activity of a trading, commercial or industrial nature, establishing an office/branch or any other place of business in India; acquiring either wholly or partly, any business undertaking in India; or, purchasing shares of Indian companies.

Applications for permission to continue such activities or offices should be made to the Reserve Bank of India before July 1, 1974.

In another directive, RBI required that without its permsision no person resident outside India (including Indian citizens) or a foreign citizen resident in India or a company (other than a banking company) incorporated abroad or in which the non-resident interest is more than forty per cent can accept appointment as agent or technical/manangement adviser in India of any person or company or permit use by others of any trade mark, which he/it is entitled to use.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

HIGH RANGE CERAMIC CAPACITORS AND SILICON RECTIFIERS DEVELOPED

The high voltage capacitors which are used in the manufacture of television and professional electronic equipment have been hitherto imported. The National Physical Laboratory, New Delhi has developed a series of disc type high voltage ceramic capacitors.

The process of manufacture consists of mixing the raw materials in the required proportion, wet ball milling, drying and calcination at a temperature of 1000°C. The calcined material is pulverised and pressed into the required shape. The pressed discs are then fired and provided with electrodes and leads. These are then encapsulated with phenolic resin and vacuum impregnated with microcrystalline wax. The capacitors so formed are tested for capacitance values and dielectric strength.

The two types of capacitors with special electrodes and leads–configuration developed are (i) temperature compensating (TCD) Capacitors suitable for use in resonant circuits or any other applications where low losses and high stability are essential and ii) general purpose (MKD & HKD) capacitors suitable for by-pass, coupling and general applications. These are being batch produced.

Capacitors of various values in the range of 25 pf - 400 pf for working voltage 1.00 KV - 4.00 KV have been developed. The raw materials and machinery are indigenously available.

The capacitors produced at NPL have been supplied to leading manufactures of TV and electronic equipment who are using them in their products. The estimated demand for 1978-79 is 2 million pieces. The know-how is available for commercial exploiation.

Know-how for the production of high power silicon rectifiers (diodes) has also been developed at NPL and has been transferred for commercial production recently. All other components have also been fabricated indigenously. Technology has been developed for making silver-tungsten tablets which can meet the requirements of semi-conductor industry. The solders for the diodes have also been developed in the laboratory.

Vacuum gauges of Pirani-Penning type constitutes another area developed at the NPL. The Pirani-Penning vacuum gauge is the most common type of gauge used to measure vacuum upto an order of 10^{-6} torr.

The gauge consists of two distinctive parts, viz., Pirani gauge and Penning gauge. It is either used in two separate parts, Pirani gauge measuring from 760 torr to 10^{-3} torr and Penning gauge from 10^{-2} torr to 10^{-6} torr. The gauges developed at the NPL have transistorized, stabilized voltage supply which is 3.3 volts for Pirani and 1950 volt for Penning. The stabilization of voltage eliminates the need for a 'set voltage' adjustment, a process which has to be done before each reading taken either with pirani or with Penning gauge. The Pirani head has a compensating element sealed at 10^{-2} torr. The Penning gauge head is an all metal construction which is completely demountable. The construction is quite rugged and the geometry is such that it initiates discharge even at low pressures of the order of 10^{-5} or 10^{-6} torr. This gauge uses almost 100 per cent indigenous components and its performance is comparable with those produced in advanced countries.

PARA-AMINO BENZOIC ACID DEVELOPED

A process for the production of para-amino benzoic acid from para-nitro benzoic acid has successfully been developed by the Central Electrochemical Research Institute, Karaikudi (Tamil Nadu). Para-amino benzoic acid is mainly used in drug and pharmaceutical industry. It is an intermediate for the production of benzocaine, procaine, hydrochloride and folic acid.

Para-amino benzoic acid is, no doubt, produced in the country by some firms but its present production is not sufficient enough to meet the indigenous requirements. It is, however, estimated that about 400 tonnes of the material is required annually.

The process developed by the Institute, involves the electrolytic reduction of para-nitro benzoic acid using tincoated copper cathodes. The lead is used as anode. Cathode is separated from anode by means of a ceramic diaphragm. Mineral acids are used as catholyte and anolyte. After reduction, the electrolyte is filtered, neutralised to the desired pH and para-amino benzoic acid is centrifuged.

The process has been studied on 350 amp. cell. The product obtained conforms to the desired specifications.

The main raw materials required for the production of para-amino benzoic acid are para-nitro benzoic acid, soda ash, sulphuric acid and hydrochloric acid. All these are indigenously available.

The major items of plant and machinery required are glass lined cell, rectifier, water cooler centrifuge, PVC lined wooden tanks, vacuum drier, busbars, anode and cathode, rotating assembly, storage tanks and chlorine absorption system.

SMALL SCALE SECTOR AND INDIA'S EXPORT TRADE

Small scale sector occupies a pride of place in India's industrial development. It has contributed substantially to the economy's efforts toward product diversification, export promotion and import substitution.

Even in the advanced countries, the small scale industries play an important role in their endeavour toward economic progress. In the United States of America, for instance, nine firms out of ten are stated to employ less than 10 persons. In the European Economic Community, the small scale sector is said to represent 95 per cent of the total production units. The very nature of these industries helps to stimulate a balanced development of an economy due to their production manoeuvreability, design flexibility, smaller capital and machinery inputs and typical labour intensive nature.

In India, the small scale sector comprises over 300,000 registered units in addition to about 250,000 unregistered units. The investment limit in terms of plant and machinery is not to exceed Rs. 0.75 million for qualifying to be a small scale unit and to derive the various advantages that the Indian Government offers to them. According to one estimate, the small sector contributes about 40 per cent of the total industrial production in the economy.

An important aspect of the development of small scale industries in India is the level of technology perfected which in turn has considerably reduced the cost of production. It has achieved improvents in design and quality, affecting all features of production which make its products competitive and acceptable in world markets. Small units set up in the light engineering and chemical industries have specialised technical skill which is comparable to that of units in the large scale sector both in and outside India.

In the arena of export trade, the small scale industrial sector in India makes sizeable contribution. This is indeed in line with the trend elsewhere in the advanced world; the sector's products and services constitute nearly 40 to 50 per cent of the total exports from Japan and Italy. The units in India no longer merely concentrate on agro—based manufacturing activity but embrace a wide range of products which vary from simple consumer goods to sophisticated finished products such as intermediates of chemicals and chemical products, plastic novelties, rubber products, electrical household appliances, scientific instruments, cycle and cycle parts, hand tools and small tools, sewing machines and parts, radios, transistors and other allied accessories in the field of electronics, processed food products, footwear and leather manufactures, spindle inserts, press buttons, garment buckles, paper pins and gem clips, grease nipples, hair clippers, spectacle hinges, mechanical toys, wire netting and wire mesh, expanded metal products, barbed wire, rolling shutters, spring washers, machine screws, snap fastners, pressure cookers, oil pressure stoves, stapling machines, hair pins, flexible metallic tubing, diamond tools, machine shop vices, conduit pipes, steel furniture and various other items.

In addition to direct exports, the small scale sector in India undertakes sub-contracting business from the large industrial enterprises. The sector is also capable of feeding industrial units anywhere in the world. Such sub-contracting should prove helpful to the large industrial complexes within and outside India, based on the economic principle of comparative cost advantage, particularly in areas of labour intensive production. Already a good number of units both from within India and abroad are taking advantage of the built-in advantage that the small units in India possess. The collaborative manufacturing technique of this type between India and overseas firms is likely to enable the larger overseas units to concentrate more in fields of production of sophisticated components and marketing. It will leave room for the smaller firms to operate in the less sophisticated areas more efficiently and economically.

The size of small industries sector, the range and diversity of its production and the level of technological advancement made by it, clearly demonstrate the export potential of small industries. The sector is already exporting products such as—agricultural implements, hardware, galvanised water pipes, corrugated iron sheets, building materials, padlocks, general merchandise, paints and varnishes, razor-blades, hosiery, readymade garments, machinery and equipment, electrical materials, chemicals, dye stuffs, radios, transistors, fancy goods, toys, ivory carvings, scientific instruments, precious stones, beads, automobile parts, cycles and parts, sewing machines and parts, electrical appliances, dry cell batteries, woollen carpets and druggets, ceiling fans, hospital and surgical equipment, cosmetics and toilet goods, processed food products, groceries, stationery items, sports goods, medicines, brooms, brushes, trunks and buckets. It is estimated that merchandise valued at over Rs. 2000 million manufactured by this sector is being exported from India, accounting for about 10 per cent of the country's total exports.

To encourage the small scale industries in India, a chain of industrial estates are being set up throughout the country. These estates offer not only space to the enterpreneurs but also training facilities for technical hands as well as facilities for research in design and product adaptation. The necessary infrastructure is also being strengthened. The Government of India has embarked upon measures such as training in export marketing for small scale industrial products, dissemination of commercial information, procurement of raw materials for export production, identification of export markets, exportable products and export worthy small scale units and rendering similar other commercial and technical services to the existing and prospective exporters from small scale industries sector.

The State Directors of Industries also look after export promotion work in small industry sector at the state levels. Some of them have set up separate export organisations for the purpose. The role of Maharashtra Small Scale Industries Corporation in the export trade is a case in point.

The Import Policy of the Government of India provides certain concessions in the allotment of imported raw materials to small scale units for export production. Besides, the Industrial Raw Materials Assistance Centre of the State Trading Corporation of India Ltd, also supplies imported raw materials to actual users and registered exporters in "off-the-shelf" form and they offer priority to small units. The Industrial Development Bank of India and its subsidiaries, besides other commercial banks, provide finance to these units for export on deferred terms and conditions.

Recently, the Government have announced their intention to enlarge and intensify a variety of positive measures to promote the growth of small scale industries. In addition to the distinct measures being already offered in this respect, extra allocation of imported raw materials is being made available to the small scale units, which are engaged in the industries exclusively reserved for this sector. Such units would be granted import licences for a value 20 per cent higher than that of the previous year. Allocation of scarce indigenous raw materials made to this sector is also being progressively increased. Further, in order to compensate for the rise in prices, the import entitlement of actual users, both priority and non-priority, in the small sector would be enhanced by 25 per cent in respect of non-ferrous metals and mild sheet. The basis of licensing to new units in the small sector has also been liberalised. Entitlement of such units for imported raw materials, components and spares would be calculated at 40 per cent of the value of machinery as against 30 per cent in the preceding year. The maximum value limit for new units has also been raised from Rs. 0.075 million to Rs. 0.10 million for non-priority and from Rs. 0.15 million to Rs. 0.20 million per annum for priority industries.

The manufacture of certain articles, such as, absorbent cotton, automobile radiators, barbed wire, bolts and nuts (except high tensile and other special type), miniature bulbs, automobile ancillaries, garage equipment, plastic processed products and many other items are resecured for units in the small scale sector i.e. with investment in machinery and equipment up to Rs. 0.75 million and in case of ancillary industries up to Rs. 1 million. This policy of reservation is expected to be extended to larger number of products consistent with the potentialities and performance of the sector.

Under the current Industrial Licensing Policy in India, small entrepreneurs are accorded preference over larger industrial houses and foreign majority companies in setting up new capacity. Co-operatives

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and small and medium entrepreneurs are being encouraged to participate in the production of mass consumption goods. The 'delicensed' sector of investment up to Rs. 10 million is meant primarily for small and medium entrepreneurs.

In the field of industrial collaboration, considerable initiative has been shown by Indian entrepreneurs in setting up joint ventures in overseas markets. There are vast possibilities of setting up small industrial units in certain countries jointly with local entrepreneurs in the field of light engineering, hand tools, small tools, car batteries, electrical bulbs and household appliances. These are only examples and there could be many more areas, where India could build small scale units abroad.

With the help of the needed encouragement being offered by the Indian Government in matters of industrial licensing, sectoral reservation for product expansion, import licensing and export growth, the small scale sector in the country has already contributed its mite in the mighty task of building a resurgent economy. The experience gathered by the industry can be made available to the other partners of progress in the world, alike in the emerging and advanced countries. While the developing countries can resort to exchange of the experience of India's small scale sector, the sophisticated economies can do well to vacate typical production areas of labour intensive nature so that they can concentrate on more complicated processes of production and knowhow. □

Attention

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ALUMINIUM CONDUCTORS AND WIRES FOR EXPORT

With fresh export orders to the tune of over Rs. 5.50 million secured from the U.K., Zambia and Sri Lanka for supply of aluminium conductors and cables, M/s. Aluminium Industries Limited (ALIND), Ceramic Factory Road, Kundara, Kerala, have amply proved qualitative supremacy and price competitiveness of Indian cables and wires in international markets.

Of the total value of orders, the one secured from a firm in London for ACSR conductors alone accounted for Rs. 4.7 million. The supplies are to be made to M/s. Zambia Electricity Supply Corporation. The second order worth Rs. 0.7 million received from a Zambian firm is also for supply of ACSR conductors while the third secured from Sri Lanka Electricity Board, Colombo at a value of Rs. 102,000 relates to supply of 7,000 metres of solidol PVC insulated aluminium underground cables.

Of the orders mentioned above, the third one for the supply of solidol PVC insulated aluminium underground cables to Sri Lanka is the first of its kind secured from that country for the new variety of underground cable developed by ALIND. The new variety-'ALIND SOLIDOL', is a solid sector shaped aluminium conductor, PVC insulated and aluminium strip armoured underground cable. This is the modern achievement in aluminium cables. Way back in 1964, ALIND pioneered in manufacture of this type of cable and even today they are the only manufacturers of this type of cables in whole of Asia, it is claimed.

This light weight, compact, low priced PVC aluminium underground cable will soon replace completely the stranded cored, steel wire armoured PVC aluminium underground cables. Two years back ALIND exported this cable to Dubai in the Persian Gulf. They are hopeful of securing sizeable orders for this variety from countries in West Asia, Africa and South East Asia.

Presently, they have on hand export orders to the tune of nearly Rs. 17 million for supply of ACSR conductors to Libya. These were secured through M/s. Kamani Engineering Corporation, Bombay.

During 1972-73, ALIND exported aluminium cables and conductors at a value of Rs. 3.86 million while in the preceding year the exports were of the order of Rs. 3.50 million.

In the well diversified range of their overseas customers, UK, Philippines, Bangladesh, Libya, Zambia and Sri Lanka are significant.

Their manufacturing plant located at Hyderabad in Andhra Pradesh turns out sophisticated wire working machines for aluminium, copper and steel. The range of machinery covers wire drawing machines, wire stranding machines, bunching machines, rewinding machines, cables armouring machines, pointing machines and twining machines. ALIND's another plant for manufacture of cables, located at Mavelikara (Kerala), has already gone on production stream. Besides these, two more units are under erection at Bangalore and Coimbatore and both are expected to be commissioned shortly.

Apart from wires and cables, ALIND also entered into export business of wire working machines and high voltage switchgears. In 1972, they supplied wire stranding machines and rewinding machines to Sri Lanka.

In the field of import substitution, they have made a good headway. Hitherto figuring prominently in the country's import bill, a two-head paper taping machine for the manufacture of transformer winding stripes and wires has been developed by ALIND. One of the wire working machines–fine wire drawing machine–has been developed on their own design capability and has been marketed recently. Their research and development activities in the line are expected to save a sizeable outgo of foreign exchange in the coming years.

During 1972-73, ALIND produced 11,335 tonnes of conductors as compared to 11,172 tonnes in 1971-72. Production of switchgears too improved to Rs. 9 million from Rs. 6.7 million while the output of machinery improved by 25 per cent during 1972-73 as compared to that in the preceding year.

India's wires and cables industry earned foreign exchange at a value of Rs. 126 million during 1972-73 as compared to Rs. 112.5 million in 1971-72. The export range of the industry included insulated cables and wires, power aluminium conductors, power cable conductors and other types.

In the organised sector, there were 40 units engaged in the production of ACSR/ACC conductors during 1972 with an installed capacity of 103,950 tonnes. The production in the year was 81,557 tonnes valued at nearly Rs. 557 million. In the area of paper insulated power cables, the installed capacity is of the order of 8,640 tonnes spread over among 7 units.

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The production was estimated at 2,666 tonnes (1972) at Rs. 157.50 million.

During 1972, the figures of number of units, installed capacity and production for other varieties of cables and wires were: underground telephone cables (dry core and coaxial)-1 unit, 8,250 kilometres and 2,956 kilometres (Rs. 76.58 million); PVC power cables-11 units, 14,604 kilometres and 16,214 kilometres (Rs. 240 million); PVC/VIR cables-25 units, 61,112 kilometres and 67,549 kilometres (Rs. 313.25 million) and bare copper conductors-4 units, 14,200 tonnes and 876 tonnes (Rs. 3.35 million).

ORTHO-XYLENES ON EXPORT STREAM

Figuring prominently in India's import bill hitherto orthoxylenes and mixed xylenes are now being manufactured in the country by M/s. Indian Petrochemicals Corporation Limited (IPCL), Baroda. Apart from satisfying the domestic demand, IPCL have now entered into the export field also. Recently, they have received a sizeable order from a European country for the supply of 2,500 tonnes of orthoxylenes at a value of $ 0.5 million. The order is being executed at the rate of shipment of 100 tonnes per day.

IPCL have built up sound base for the production of xylenes for the first time in the country. An ortho-xylene project has been built by IPCL at a cost of Rs. 280 million. Creditably, about 75 per cent of the machinery used for the plant is indigenous. The Gujarat Aromatic Project has three manufacturing units for production of xylenes. Of this, including the ortho-xylene plant, two have gone on production stream while the third related to para-xylene manufacture is also expected to commence production very shortly.

Ortho-xylene is mainly used in the manufacture of phthalic anhydride which is used for manufacturing plastic products while the mixed-xylenes function as solvents in the production of paints and pesticides. With the increased production of IPCL in the coming years, the country's imports bill of xylenes is expected to be reduced sizeably. During 1972-73, xylenes were imported at Rs. 4.6 million as compared to Rs. 4.5 million in 1971-72. U.S.A., U. K. and U.S.S.R. were the main suppliers during 1972-73.

EARTH MOVING EQUIPMENT TO NEW ZEALAND

The export range of earth moving equipment supplied from India includes rock drilling machinery, mechanical shovels, parts of mining machinery, mineral crushing, sorting and moulding machinery, concrete equipment, stones and mineral crushing machinery, machinery for sorting earth stones, machinery for sorting and screening coal, floating cranes, crane lorries, power cranes and rollers for lawns and sport grounds. Arab Republic of Egypt, Sri Lanka, Greece, Thailand, Afghanistan, Burma and Malaysia are among the leading buyers.

Recently, M/s. Hindustan Motors, 4, India Exchange Place, Calcutta-1, secured a sizeable contract for earth moving equipment at a value of Rs. 4.7 million from New Zealand. The order was secured by the firm through M/s. General Marketing and Manufacturing Company Limited.

The Calcutta firm is mainly engaged in the manufacture and assembly of motor cars, trucks, chassis and other items in the line. Apart from these, it undertakes manufacture of a wide variety of engineering products, such as, automobiles and internal combustion engines, cranes, earth moving equipment and other types of fabrication works. Earth moving equipment is being manufactured by the firm at its heavy engineering division at Uttarpara near Calcutta as also at Trivellore. They manufacture 2.5 to 3 cubic yard shovels and have recently develped an indigenous shovel of similar capacity below 1 cubic yard. They are likely to commence production of the shovel shortly. They are also approved for the manufacture of 4.5 cubic yard capacity shovels. The indigenous content in the manufacture of shovels is as high as 90 per cent. They started production of dumpers in 1971 in the range of 25 tonnes. The firm is currently manufacturing cars at a rated capacity of 19,000 vehicles per annum, as also trucks.

In the organised sector, there were 6 units engaged in the manufacture of road rollers with a total capacity of 1530 numbers (1971). During 1972, the production was estimated at 933 numbers as against 336 numbers in 1971. Excavators are being produced by two units in the private sector and their production is enough to meet domestic demand. During 1971-72, in all 102 excavators were manufactured and their number is expected to reach 126 in 1972-73. The production of dumpers during 1971-72 was 99 numbers. For 1972-73, the output is expected to reach 137 numbers. As compared to production of crawler tractors during 1971-72 at 242 numbers, in 1972-73 it is expected to be of the order of 254 numbers.

During 1971-72, output of many other items in the line was : scrappers 38 numbers (estimated at 54 numbers in 1972-73); wheeled loaders 45 numbers (estimated at 72 numbers in 1972-73); forklift trucks 427 numbers (estimated at 557 numbers in 1972-73); mobile cranes 62 numbers (estimated at 74 numbers in 1972-73); diesel loco shunters 18 numbers (estimated at 27 numbers in 1972-73) and air-gas compressors 5200 numbers (in 1972).

REFRIGERATORS AND AIRCONDITIONERS TO WORLD MARKETS

Airconditioning and refrigeration technology has made rapid strides in India in the last two decades. Apart from meeting the domestic requirements, the airconditioning and refrigeration sector has come to contribute substantially to the country's foreign exchange earnings. For instance, during 1972-73 the export value of the equipment and accessories in the line was of the order of nearly Rs. 13 million.

Airconditioning machinery secured as much as Rs. 3.75 million while parts and accessories brought in Rs. 1.72 million. Poland was the largest buyer for airconditioning machinery at over Rs. 1.50 million. Singapore was the second best market which imported worth Rs. 0.40 million, followed by Malaysia at Rs. 0.35 million, Hungary at Rs. 0.24 million and Dubai at Rs. 0.22 million. Iran, Muscat, Arab Republic of Egypt, Abu Dhabi and Hong Kong were other importing destinations. Parts and accessories were bought by about one and half a dozen countries at a cost of Rs. 1.72 million. Singapore, Malaysia, Poland and Muscat were the principal importers.

In the same year, domestic refrigerators (complete) earned Rs. 2.82 million. Poland constituted the major buyer having imported 4,784 units at a value of over Rs. 2.60 million, accounting for the lion's share of overseas supplies. Dubai, Mauritius and Nigeria were significant among other buyers. Refrigerator parts brought in nearly Rs. 0.20 million. Poland was again the principal importer which bought worth Rs. 0.12 million, followed by Sudan and Kuwait.

Additionally, during 1972-73 refrigerators (non-electrical) and parts secured foreign exchange at Rs. 1.38 million while air coolers were supplied abroad to fetch Rs. 1.20 million. Kuwait was the leading buyer of refrigerators and parts while air coolers were purchased by nearly a dozen countries among which Kuwait, Dubai and Singapore were significant.

Besides, ice making machinery and other refrigerators and parts were active in the export trade. Poland, Arab Republic of Egypt, Sri Lanka, Thailand, Kuwait and U.S.A. were the significant buyers.

Adding to the export endeavour of air-conditioning and refrigeration industry, M/s. Voltas Limited, 19, Graham Road, Ballard Estate, Bombay, earned foreign exchange at a value of Rs. 5 million during the year ending August, 1973 as compared to Rs. 4.2 million in 1971. In fact, the company's export performance during the year under review has accounted for more than 33 per cent of the entire export value earned by the industry in the year. The firm's air-conditioners, refrigerators and parts are popular in a wide range of markets the world over which include even the sophisticated ones. Only recently, it has introduced diamond drill bits and window air-conditioners in some of the East European countries.

The manufacturing activity of the firm covers complete air-conditioning and refrigeration plants and accessories, room air-conditioners, water coolers, electric overhead travelling cranes, forklift trucks, electric motor starters and switchboards. The firm has active plans for expanding its production range and lately has secured letters of intent in respect of three new projects—centrifugal packaged chillers, equipment for transport refrigeration and plate freezers. After completion, these projects will add about Rs. 40 million to its annual production turnover.

The firm has recently set up a Research and Development Division which aims at product development and diversification. In the field of import substitution too, the firm has made a good headway. During the year under review, it was able to reduce its import content by 50 per cent. Alongside this, it has also achieved progress in the area of product improvement and development of new items.

EXPORT PERFORMANCE AND POTENTIAL

TRENDS IN ENGINEERING EXPORTS

Exports of Indian engineering goods during January-June 1973 aggregated to Rs. 877.2 million as against Rs. 642.9 million in the same period of the preceding year, recording an increase of 36 per cent.

Several engineering items have revealed export improvement in the first half of 1973. The export trade in steel structurals has increased nearly ten times to the level of Rs. 114.28 million in the first half of 1973 as compared to Rs. 11.50 million in the corresponding period of the preceding year. Asbestos cement plant and machinery constituted to be another growth point—Rs. 19.57 million against Rs. 3.66 million, data processing machines secured Rs. 17.42 million as against Rs. 5.25 million. Export performance of electric fans and parts also witnessed growth from Rs. 8.74 million to Rs. 15.03 million. Among other categories whose exports have recorded sizeable rise were auto and auto parts (from Rs. 76.72 million to Rs. 99.05 million), Railway wagons, coaches and parts (from Rs. 16.92 million to Rs. 25.82 million), bicycles and parts (from Rs. 38.69 million to Rs. 58.71 million), hand tools, small and cutting tools (from Rs. 35.95 million to Rs. 40.46 million), electric transformers, motors etc. (from Rs. 24.94 million to (Rs. 30 million), C.I. products (from Rs. 20.57 million to Rs. 27.68 million), diesel engines and parts (from Rs. 23.05 million to Rs. 31.45 million), mechanical pumps (from Rs. 4.60 million to Rs. 5.70 million), batteries–dry and storage (from Rs. 13.16 million to Rs. 13.72 million), radios and parts (from Rs. 8.03 million to Rs. 9 million) and textile, jute and knitting mill machinery (from Rs. 16.24 million to Rs. 16.34 million).

The increase in the export earnings of engineering items in the first half of 1973 would have been higher but for the shortfalls in performance of some of the items like transmission line towers, electric wires and cables, machine tools, Railway track materials, sugar plant machinery and sewing machines and parts. The declining trend in the export of these items was mainly due to the non-availability of raw materials which proved to be a detriment as much at home as abroad.

Some of the notable features of exports during the first half of 1973 were the supply of cement plant to Iraq and Kuwait, bicycles to U.S.A. and Indonesia, steel structurals including bridges to Bangladesh, thermal boilers to Malaysia and garage equipment to U.S.S.R.

India's exports of engineering goods recorded a 19 per cent increase during 1972-73 at Rs. 1502 million as compared to Rs. 1260 million in 1971-72.

COTTON TEXTILES EXPORTS INCREASE

Indian exports of cotton textiles during the first half of 1973 (January-June) have been placed at Rs. 830.5 million, revealing 24 per cent increase over the exports during the corresponding period in 1972 at Rs. 668.5 million.

In the year 1972-73, the country's export of cotton piecegoods earned Rs. 1009 million, cotton yarn Rs. 246.8 million, cotton apparel Rs. 298.5 million and hosiery Rs. 9.3 million. Major buyers of Indian cotton textiles include Afghanistan, Saudi Arabia, Bangladesh, Malaysia, Singapore, Sudan, EEC, UK, Sweden, USSR, Poland, Canada, Australia, New Zealand and USA. For cotton textiles India has quota arrangements with USA, UK, and EEC countries.

During January-June 1973, cotton piecegoods accounted for Rs. 504.7 million as against Rs. 344 million in the corresponding period in 1972. In terms of length, the respective figures are 267 million sq. metres (m.s.m.) in 1973 and 185 m.s.m. in 1972. Out of this, Bangladesh imported nearly 2 m.s.m. The offtake by Malaysia grew 400 per cent to 3.9 m.s.m. whereas that of Singapore grew 900 per cent at 5.8 m.s.m. during the period under review. Japan's purchases from India stood at 12.2 m.s.m. valued at Rs. 28.2 million. Other major buyers include France (4.8 m.s.m. in January-June 1972 and 6.6 m.s.m. in January-June 1973), Federal Republic of Germany (7.4 m.s.m. and 4.5 m.s.m.), UK (25.6 m.s.m. and 75.7 m.s.m.), USA (34.5 m.s.m. and 56.5 m.s.m) and USSR (56.2 m.s.m. in January-June 1973).

Export of cotton yarn during the first half of 1973 were placed at 8 million kgs. valued at Rs. 98 million which are slightly lower than the figure for January-June, 1972 which stood at 10 million kgs. This was because yarn shipments were banned in March 1973 with the exception of yarn from the mills for further processing and exports. Bangladesh's imports from India during the six months under review aggregated to Rs. 30.5 million. The exports to Czechoslovakia and UK stood at Rs. 19.7 million and Rs. 11 million respectively. Poland at Rs. 5.2 million and Arab Republic of Egypt at Rs. 4.7 million were prominent among other buyers. Total exports of cotton yarn during 1972-73 were of the order of about Rs. 247 million as against Rs. 177 million in 1971-72.

Exports of cotton apparel accounted for Rs. 119 million during the six months of 1973, which were marginally lower than Rs. 122 million during the corresponding period in 1972. The intake position was: USSR Rs. 33.3 million, Sweden Rs. 25.4 million and USA Rs. 13.5 million. Federal Republic of Germany, France, Denmark, UK, Australia and Japan were other significant buyers.

Cotton hosiery improved its export earning from Rs. 3.3 million in January-June 1972 to Rs. 4 million in the same period of 1973. USA continued to be the major buyer for hosiery. Other cotton items improved from Rs. 95 million during January-June 1972 to Rs. 104.5 million in the corresponding period in 1973. This category includes among others—towels and bed sheets, pillow cases and handkerchiefs, sewing thread, cotton socks and embroidery cloth. The last named doubled its exports from Rs. 3.2 million to Rs. 6.3 million in the first half of 1973.

SPORTS GOODS ON EXPORT STREAM

During the first half of 1973 Indian exports of sports goods showed considerable rise over the corresponding period in 1972, the improvement being of the order of Rs. 5.5 million. The highest ever recorded figure of Rs. 20.8 million was touched during the half year under review as compared to Rs. 15.4 million in the preceding year.

The export of footballs and other leather balls, tennis, badminton and squash rackets, rubber balls, rubber balloons, etc. showed an all time high.

During 1972-73, India's exports of sports goods shot upto Rs. 36.6 million as compared to the previous year's turn-over of Rs. 25.5 million. The target of Rs. 30 million, set for 1972-73, was surpassed by about 20 per cent.

Indian sports goods industry provides typical example of labour intensive industries. The industry has organised itself into a vital sector, having a number of small, medium and large size units. Needless to say, the products are competitive in respect of price and sophistication. The range of products includes : footballs, rugby balls, covers and bladders, cricket requisites, hockey sticks and balls, tennis rackets and balls, badminton and tennis racket presses, shuttlecocks, polo balls and sticks, fishing rods, appliances for gymnastic and indoor games like carrom boards, chess sets, ping-pong balls and rackets, billiard tables, balls and sticks and a host of other items. Besides, EPNS sportsware, such as, medals, trophies and sports cups are also produced.

Major buyers include U.S.A., Canada, Australia, U.K., Denmark, France, Federal Republic of Germany, Nigeria, Sudan, Tanzania Republic, Iran, Netherlands and Singapore.

WOOL AND WOOLLENS CONTRIBUTE TO EXPORT TRADE

In India's export trade, woollen industry has shown remarkable promise. Its woollen-ware has never been in such a great demand as they are to-day. The exports improved from Rs. 358 million in 1971-72 to over Rs. 480 million in 1972-73, recording an increase of about 34 per cent.

The export of woollen products, such as, carpets, druggets and numdahs was of the order of Rs. 212.50 million as compared to Rs. 131.8 million in 1971-72. Among the favourable factors for the growth have been the rising demand for natural fibre carpets in western countries and increase in unit value per metre of woollen carpets. Major traditional importers have also increased their offtake ; West Germany from Rs. 42 million to Rs. 80 million and U.S.A. from Rs. 35.50 million to Rs. 54 million. U.K., Canada, Netherlands and Sweden absorbed worth Rs. 23.79 million, Rs. 12.46 million, Rs. 7.32 million and Rs. 3.46 million respectively.

Woollen hosiery was the next item which was responsible for the growth in export. The export value of hosiery amounted to Rs. 161.80 million in 1972-73 as compared to Rs. 144.80 million in 1971-72. U.S.S.R., Poland and Czechoslovakia were the leading buyers with their intake of Rs. 135.30 million, Rs. 14 million and Rs. 9.41 million respectively during the year 1972-73 as compared to their intake of Rs. 117.80 million, Rs. 2.65 million and Rs. 8.6 million respectively in the preceding year. Sizeable exports of this item were made to Libya too. However, supplies of Indian hosiery declined to Hungary, Kuwait and Malaysia during this period. Saudi Arabia and Nigeria emerged as new destinations with their limited purchases at Rs. 390,000 and Rs. 900,000 respectively.

The export of raw wool picked up. It has been having a continued declining trend over the past few years. Its exports improved to Rs. 60 million from Rs. 35 million. The increase was due to alround increase in raw wool prices throughout the world.

As compared to last year, the export of other categories which brightened up were blankets (Rs. 3.4 million against Rs. 2.23 million) and shawls (Rs. 2.88 million from Rs. 1.19 million). Marginal improvements were also recorded by shoddy wool, wool tops and worsted yarn and knitting wool.

The intake of readymade garments, woollen and mixed fabrics, by oversease markets was, however, less as compared to last year. The main reason responsible for this was decline in demand by U.S.S.R., German Federal Republic, Hong Kong, Hungary, Singapore, Sudan, Denmark, Zambia, Sweden and Norway.

The up-trend in exports of wool and woollen products is likely to be maintained both by the organised and the decentralised sectors in view of the growing potential of this industry.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

INDIA'S NATIONAL INCOME ESTIMATE

A "quick" estimate of India's national income for the year 1972-73 at constant prices (1960-61) revealed an increase of 0.4 per cent over the previous year against 1.7 per cent in 1971-72 over 1970-71, according to the information received from the Central Statistical Organization (CSO) of the Government of India. The net national product (national income) is estimated at Rs. 190,010 million during 1972-73 at 1960-61 prices with a per capita income of Rs. 337.5.

At current prices the "quick" estimates of the national income stood at Rs. 389,210 million, giving a per capita income of Rs. 687.6 in 1972-73. The per capita income at current prices was Rs. 645.6 and Rs. 627.5 in 1971-72, and 1970-71 respectively.

Although there was a fall of 6.7 per cent in the income from agricultural sector in 1972-73 compared with the preceding year, the manufacturing and construction sectors as also electricity, gas and water supply showed sizeable improvement. In the manufacturing sector (registered factory establishment), the increase in 1972-73 was 4.4 per cent against 3.8 per cent in 1971-72. In the construction sector, the increase was 9.2 per cent against 1.8 per cent.

While such was the position of the rate of growth in national income, the population growth rate was of the order of 2 per cent and that is the major reason why the per capita income stood at Rs. 337.5 at constant prices in 1972-73 as compared to Rs. 343.6, Rs. 345.8 in the years 1971-72 and 1970-71 respectively.

Of the net national product at current prices during 1972-73 (389,210 million), the share of agriculture was as much as Rs. 175,000 million. The manufacturing sector contributed Rs. 53,050 million, the construction industry contributed Rs. 23,370 million. Transport, storage and communication accounted for Rs. 18,930 million; trade, hotels and restaurues; Rs. 43,440 million; public administration and defence accounted for Rs. 20,380 million.

India's population was of the order of 566 million during 1972-73 as compared to 554 million in the preceding year.

The net product of public sector in India at current prices accounted for Rs. 50,480 million in 1970-71 as against Rs. 44,740 million in 1969-70, Rs. 27,490 million in 1965-66 and Rs. 14,230 million in 1960-61.

Gross fixed capital formation was of the order of Rs. 18,310 million in 1971-72 against Rs. 14,150 million in 1970-71; it was only worth Rs. 12,570 million in 1965-66 and Rs. 7,160 million in 1960-61. Domestic savings amounted to Rs. 44,610 million in 1970-71 against Rs. 36,010 million in the preceding year. Of this, the household sector contributed Rs. 33,350 million against Rs. 27,990 million, while the corporate sector contributed Rs. 2,190 million against Rs. 1,470 million and public sector Rs. 8,770 million against Rs. 6,550 million.

NEW TRANSFORMER UNIT IN PUBLIC SECTOR

A Rs. 150 million transformer factory in the Public Sector is to be set up at Jhansi in Madhya Pradesh by M/s. Bharat Heavy Electricals Limited (BHEL), Bhopal.

Situated at a distance of nearly 15 kilometres from Jhansi, on Jhansi - Lalitpur Road, the proposed transformer factory will be the first ever to be set up in the country with completely indigenous technology without any foreign collaboration.

The proposed transformer factory will be yet another unit of BHEL, in addition to their factories at Bhopal, Hyderabad, Tiruchi and Hardwar.

At peak production, the Jhansi factory will build over 1000 power and instrument transformers every year with a sale value of Rs. 140 million. It will effect an annual foreign exchange saving of Rs. 65 million.

The planned growth of transmission systems in the country requires the setting up of additional capacity for power and instrument transformers. The gap between demand and supply of transformers is likely to widen in the Sixth Five Year Plan. The Jhansi transformer factory will help bridge the gap between demand and supply of transformers. This factory will also facilitate BHEL unit at Bhopal to rationalize its product range and utilise existing facilities for building larger transformers.

The Bhopal Heavy Electrical factory is already manufacturing large power transformers and instrument transformers. In 1973-74 their total output of transformers is expected to be of the order of 3800 MVA, besides a large number of instrument and special transformers. The largest unit size so far built by them is of 250 MVA.

During 1972, India's transformer industry's output of power distribution transformers in the organised sector was of the order of 11.31 million KVA as compared to 10.15 million KVA in 1971. An installed capacity of 14.46 million KVA was spread over among 27 units (1972) as compared to 9.27 million KVA (1971). In terms of value, the production during 1972 was estimated at Rs. 513 million as compared to Rs. 516.10 million in the preceding year.

Bharat Heavy Electricals Limited is the largest Public Sector Undertaking in India. Annually, it produces equipment equivalent to a power generating capacity of over 3.5 MKW per annum.

Set up in 1956 with the establishment of a factory at Bhopal (M. P.), three more units were later established at Tiruchi (Tamil Nadu) in 1965, Hyderabad (Andhra Pradesh) in 1965 and Hardwar (Uttar Pradesh) in 1967. Each of these units specialises in a particular sector in the field of power generation equipment manufacture.

As a growing member of the international 'Power Club' BHEL serves Hydro, Thermal and Nuclear power stations throughout the country and abroad, plus, industries like steel, petro-chemicals, refineries and paper. Many of these use BHEL's process steam boilers and packaged turbo sets. In all these units, production increased appreciably in 1972-73 over 1971-72.

Apart from earning foreign exchange through exports, the BHEL units have also saved the country foreign exchange through a rapid process of indigenisation and import substitution. In the process, they have won several national awards.

They are exporting their products to a well diversified range of markets in which the U.K., U.S.A., Malaysia, Iraq, Cambodia, U.A.R., Malawi, Kenya and Ghana are significant.

Today, all the units of BHEL are geared to meet India's needs for power generation equipment for the coming Fifth Five Year Plan and the years thereafter.

ACCENT ON IMPLEMENTATION IN CRUCIAL INDUSTRIES

While fixing priorities and strategies for the various schemes of industrial activity, the Fifth Five-Year Plan (1974-79) has laid emphasis on the aspect of plan implementation in crucial industries. The key to the success of the Plan is to lie in ensuring that in the next two years existing projects in vital industries and services are operated at full capacity. To be able to do this the major limitation has been the inadequate availability of scarce materials such as coal, steel, non-ferrous metals, fertilizers, cement and power. These are the areas where the accent on implementation is of prime consequence.

From the estimated output of 79 million tonnes in 1973-74 coal industry is to improve its production to 135 million tonnes by 1978-79 according to the target fixed in the Fifth Plan. The magnitude of this task would call for an unprecedented effort both on the part of the producing agencies and the agencies which would be involved in supplying inputs such as power and transport, railways and explosives. The nationalisation of the coal industry has made it possible to undertake re-structuring and rationalisation of the mines into viable units. Out of the production target of 135 million tonnes, about 115 million tonnes are expected to arise from expansion and re-structuring of the existing mines while the balance of 20 million tonnes is anticipated to come from new mines, a substantial number of which are to be open cast mines that can be put into operation in a relatively short time. The anticipated increase in production during the Fifth Plan is of the order of 10 to 12 million tonnes every year.

The capacity and production targets envisaged in the Fith Plan for steel ingots are 15.15 million tonnes and 12.77 million tonnes respectively. The required additional capacity is to arise from the expansion of the Bhilai and the Bokaro steel plants. These projects have already recorded progress and there is assurance regarding their completion well before the end of the Plan. In view of the experience in the Fourth Plan where irregularity of power supply has been a constraint, captive power generation facilities to be provided to both Bokaro and Bhilai projects. As regards Durgapur and Rourkela projects, power generation is sought to be improved in the Damodar Valley Corporation (DVC) and Talcher power stations and to extend the trasmission lines from Balomela to Rourkela. With the formation of Steel Authority of India Limited (SAIL), efforts in regard to iron ore, coking coal and research and development are sought to be coordinated. With these measures capacity utilisation is envisaged to be increased sizeably from the existing steel plants.

Supply of heavy engineering equipment being one of the essential inputs for the promotion of the core sector industries, accent on implementation will be in reference to the heavy engineering units in the country too. Unlike at the beginning of the Fourth Plan, the Fifth Plan commences with adequate orders on the units manufacturing heavy electrical, metallurgical, chemical and mining equipment. This should enable the manufactures to plan production and place advance orders for components. As a result of the several measures that have already been initiated, sizeable improvement in production has already been achieved in respect of heavy electrical equipment and fuller utilisation of capacity is envisaged to be reached by 1976-77. In the case of the Mining and Allied Machinery Corporation too, production has recorded improvement. As regards the metallurgical and chemical equipment, covered under the programmes of M/s. Heavy Engineering Corporation and M/s. Bharat Heavy Plates and Vessels, there has been a definite trend in production improvement. Near full utilisation of capacity in these two underkings is expected to be achieved well before the end of the Fifth Plan. In the field of transport equipment the twin need is to utilise the existing capacity more efficiently for commercial vehicles in the private sector as also to expeditiously implement the approved expansions. Also a large expansion in an existing public sector vehicle manufacturing unit has been provided for and is expected to be completed by the end of the Plan. The private sector machinery manufacturing units have already come to receive large orders for equipment, such as, sugar machinery, cement machinery, and power machinery. Diversification of production within licensed capacity for the manufacture of industrial machinery has been approved by the Government of India in order to mobilise the resources in this sector in a fuller manner. With comfortable order books and the corrective measures in terms of implementation, the heavy engineering units should be in a position to achieve the target set for the Plan.

In the non-ferrous metal sector the output of aluminium is targetted to increase to 370,000 tonnes by 1978-79 as compared to the expected production level in 1973-74 at 190,000 tonnes. The target and the anticipated production level in these two years for copper have been placed at 45,000 tonnes and 8,000 tonnes and for zinc 100,000 tonnes and 28,000 tonnes respectively.

Out of the additional production of 180,000 tonnes of aluminium about 100,000 tonnes is to arise from the Korba Smelter in the public sector which is already under construction. The planned production is to emerge from full utilisation and expansion of existing units approved in the private sector.

The smelter capacity for copper is likely to be 57,000 tonnes even at the beginning of the Fifth Plan as compared with the targetted production of 45,000 tonnes of the metal by 1978-79. This would indicate the easy possibility of achieving the target by the plan end. The major emphasis in the plan period would be on development of adequate mining capacity to feed the smelters. Mine development at Khetri has already been speeded up and a number of new mines have been taken up for development.

Proposals to step up zinc production include the expansion of capacity of two existing smelters from 38,000 tonnes to 85,000 tonnes over the Fifth Plan period. Two new smelters are to be set up in the public sector—at Visakhapatnam and Dariba-Rajpura—with an aggregate capacity of 80,000 tonnes. The new capacities are hoped to be made available in the plan period itself. While the smelter at Visakhapatnam would be based upon imported concentrates; the other new smelter would eventually run on indigenous concentrates.

Installed capacity for nitrogenous fertilizers by 1973-74 is expected to be 65 per cent of the Fourth Plan target and production (11.62 million tonnes) is estimated at 45 per cent of the target. Towards the Fifth Plan nitrogen target of 6 million tonnes, existing plants and those under implementation are to contribute a little over 4 million tonnes. Five new public sector plants will provide an additional capacity of 1.3 million tonnes and at least 0.6 million from the private sector. Average capacity utilisation is only 66 per cent because certain additional plants are to be commissioned towards the end of the Fourth Plan and would take some time to reach full capacity. Corrective action is underway to remove bottlenecks which have limited the production from some of the existing plants and steps have also been taken for providing renovation and modernisation facilities at Sindri, removal of design constraints at Trombay, overcoming of coke oven gas shortage at Rourkela, power shortage at Nangal and technical problems in the gassification plant at Neyveli by change over to an alternative feed stock.

Cement production in the Fourth Plan has been 90 per cent of the target fixed–16 million tonnes in 1973-74 against the target of 18 million tonnes. It is now proposed that the output will go to 25 million tonnes by 1978-79. Approximately 50 per cent of the new cement capacity in the Fifth Plan is expected to be installed in the public sector. The Cement Corporation of India has programmed for six new plants of which five have already been sanctioned implementation. Both the progress of the public sector and the private sector in implementing new capacity will be closely watched from time to time so that the Fifth Plan target would be easy for achievement. To relieve cement deficit in the earlier years of the Fifth Plan increased production of slag cement is under consideration. This will entail faster expansion or installation of slag granulation facilities at steel plants and utilisation of surplus grinding facilities at selected cement plants. Substitution of cement by alterative materials such as lime mortars will be introduced too wherever feasible.

The petro-chemical complexes at Baroda and Bongaigaon have not made adequate progress in relation to the schedules set and the expected output also did not materialise. During the Fifth Plan these two complexes will be completed expeditiously as all down stream units at Baroda have already been sanctioned, foreign exchange will be tied-up and orders will be placed for long delivery items. In the construction of petrochemical projects, an international firm with reputation in the line has been appointed to advise and supervise the complex task of synchronising the commissioning of the naphtha cracker with the various downstream units in the complex. In the Bongaigaon project the selection of process technologies and foreign credits are expected to be finalised before the beginning of the Fifth Plan.

Installed refining capacity and throughput in 1973-74 are estimated at about 85 per cent of Fouth Plan targets. The output of petroleum products was targetted at 26 million tonnes per year in the Fourth Plan while the terminal year of that plan (1973-74) is expected to produce over 21 million tonnes. The Fifth Plan target for 1978-79 has been set at 34.6 million tonnes. The shortfall in the Fourth Plan target was due to certain factors such as the delay in completing the 2.5 million tonnes Haldia refinery. This refinery is now to be completed in the first quarter of 1974.

Koyali refinery is currently operating at 3.8 million tonnes against its capacity of 4.3 million tonnes of crude. This was due to a shortage of indigenous crude. Capacity utilisation in this refinery is expected to improve as more oil would be available from the Gujarat oil fields in 1974-75. In the same manner, shortage of indigenous crude has restricted Barauni refinery to a throughput of 2.8 million tonnes of crude against a potential of 3.4 million tonnes. Here again modifications are underway to fully utilise the capacity by processing increased quantities of imported crude by the middle of this year. In addition to these refineries, three refinery projects with an aggregate capacity for processing 10 million tonnes of crude are under implementation and will be commissioned in the Fifth Plan. A feasibility study for another refinery has also been prepared. The Mathura refinery is scheduled to be commissioned by 1978, while the expansion of the Koyali refinery and completion of Bongaigaon refinery are expected by the end of 1976.

In the paper industry, an additional paper capacity of 400,000 tonnes is sought to be established in the Fifth Plan of which Four projects of M/s. Hindustan Paper Corporation are to contribute 210,000 tonnes. In the private sector, a capacity of 160,000 tonnes is under implementation and letters of intent have been issued for additional capacity of 800,000 tonnes. In respect of newsprint besides the projects in operation already approved in the public sector, letters of intent have been issued for about 160,000 tonnes of capacity in the private sector.

The above paragraphs briefly outline the various efforts programmed in specific basic industries so that their production targets for the Fifth Five-Year Plan can be achieved.

INTERNATIONAL MONETARY REFORM

A REVIEW

The International Monetary Fund (IMF) had to tackle the crucial issues of world monetary reform during 1973 against the background of currency crises, uncertainty and change accentuated by a further devaluation of the U. S. Dollar and the floating of major currencies. IMF's Committee of Twenty (Committee of the Board of Governors on Reform of the International Monetary System and Related Issues) has carried forward the work of reform of the international monetary system. The latest meeting of the Committee scheduled to take place in Rome in January this year is to evaluate Special Drawing Rights (SDRs) and the structure of IMF. Established in July 1972, the Committee of twenty can be described as a representative of all the members of the Fund.

It may be recalled that the Committee of twenty met in September 1973 in Nairobi and considered the first outline of monetary reform. Pursuant to this meeting technical groups were set up to deal with the questions of adjustment with the new monetary system, global liquidity and consolidation and transfer of real resources from developed to developing countries.

As regards exchange rates, interesting developments took place during 1973. Foreign exchange markets were subject to growing speculative pressures in the early months of the year. In January, for instance, the Italian authorities decided to establish a two-tier exchange market for the Lira, with the exchange rate for commercial transactions maintained within permitted margins and the rate for financial transactions fluctuating freely. The Swiss National Bank decided not to intervene in the exchange market for some time. In February, U.S.A. annouced its intention to reduce the par value of the dollar by 10 per cent. (The dollar devaluation was formally put into effect on October 18, 1973). Most industrialised countries maintained the value of their currencies in terms of gold and SDRs thus appreciating in terms of the U. S. dollar by 11 per cent. Two members of IMF, Italy and Japan, in addition to those major countries, the currencies of which were already floating (Canada, Switzerland and the United Kingdom) decided that they would not observe agreed margins for exchange transaction in their exchange markets.

In view of the continued speculative activity in the exchange markets, the major central banks in Europe and Japan suspended dealing in their foreign exchange market in early March 1973. Official foreign exchange trading was resumed on March 19 and by that time important measures in the exchange field had been announced. The German authorities indicated to the IMF a new central rate expressed in SDRs which represented a 3 per cent revaluation over the previous central rate. Six members of the EEC decided to maintain maximum margins of 2.25 per cent for rates in exchange transactions in their markets between their currencies but not to undertake to maintain margins against the U. S. dollar. The other EEC members (Ireland, Italy and the U. K.) continued to permit their currencies to float as did Canada and Japan.

The German authorities communicated on June 29, a new central rate to IMF expressed in SDRs which represented a further revaluation of 5.5 per cent. Netherlands and Norway also conveyed their decision on new central rates representing appreciation of their currencies to 5 per cent over the previous rates.

Since July, the U. S. dollar strengthened sharply. During 1973, IMF was consulted on 19 par value changes including 9 par value changes after the official devaluation of U. S. dollar.

The foreign exchange situation at the end of 1973 could be summarised as follows : seven industrial countries, namely, Austria, Canada, Italy, Japan, U. K., U.S.A. and Switzerland were not maintaining rates for exchange transactions within announced margins while other industrial countries, namely, Belgium, Denmark, France, Germany, Luxembourg, the Netherlands, Norway and Sweden maintained margins for exchange transactions of their currencies. A large production of the remainder of the Fund membership maintained stable rates of exchange for their currencies in terms of a single intervention currency–usually the U. S. dollar, the pound sterling or the French franc.

The Fund's Executive Directors decided in November 1973 to make it possible for a member to establish a central rate if it maintains a stable rate in terms of intervention currency even if the intervention currency itself is not being maintained within the agreed margins.

IMF's membership increased to 126 in 1973. Total drawings from IMF during the year amounted to the value equivalent to SDR 733 million compared with SDR 1612 million equivalent drawn in 1972 and SDR 1900 million in 1971. The use of the Fund's financial facilities was low principally because of the relative reserve ease experienced by many member countries and the facility of borrowing in international financial markets are also due to increased flexibility of exchange rate which alleviated the problem of financing balance of payments deficits.

There was no new allocation of the SDRs which remains at SDR 9315 million. During 1973, transfers of SDR were SDR 1189 million compared with SDR 1494 million in 1972.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PINE OIL FROM TURPENTINE

A process for the production of pine oil from turpentine oil has recently been developed by the Regional Research Laboratory (RRL), Jammu.

Pine oil is mainly used by the pharmaceutical and flavouring industries in large quantity because of its low production cost.

The main items of raw materials required for the production of pine oil are turpentine oil, some chemicals and solvents. All these are available easily. All the equipment required can be fabricated indigenously.

The yield of pine oil is 70 per cent by weight of turpentine oil.

CARBON - MONOXIDE DETECTOR TUBES DEVELOPED

An improved process for the manufacture of carbon - monoxide detector tubes has successfully been developed by the Central Mining Research Station, Dhanbad (Bihar).

The detection of carbon-monoxide in traces is necessary at many places of human activities, where the gas is formed due to incomplete oxidation of carbonaceous matter. Such places are generally those in and around cokeoven plants, mines, tunnels sewage treatment plants, garages, hangers and factories. The gas being highly poisonous, should be detected and estimated for safer working conditions. Sampling and estimation in laboratories with the help of usual gas analysis apparatus are often time-consuming, complicated and demand skill. The colorimetric estimation of poisonous gases in traces though not comparable in accuracy to those with normal gas analysis apparatus are often used for quick assessment. Change of colour in a column of impregnated gel either length wise or intensity wise is basis of a number of commercially available detector tubes for poisonous and obnoxious gases.

At present, all these detector tubes available in India are imported ones. The wide use and increasing demand of tubes for detecting carbon-monoxide had led RRL to develop the item.

RRL has critically examined the known colourimetric reactions of carbon-monoxide in the initial stages and finally decided to develop one based on the reduction of yellow sillico-molybdate complex to blue by carbon-monoxides gas because of ready indigenous availability of the raw materials required.

The literature on the subject, though quite extensive, provides only with the broad outlines of the process. The detailed information is collected through properly planned experiments. Systematic investigation of different aspects is undertaken as to the possibility of the method being used to make easily manipulable detector tubes. Experimental investigations are carried out by RRL for the determination of the suitability of the gel, purification and standardisation of indigenous silica gel; determination of optimum conditions for the reaction; determinaion of sensitivity of the gel and preparation of standard colour gel.

The invention has novel features. The method uses materials all of which are indigenously available, except matallic palladium. The metal is used as catalyst in the form of sulphate in very small quantity (i.e. 0.112 gm. Palladium per one thousand tubes). The method proposes an initial check on the suitability of the gel to be used. In view of different varieties of commercial silicagels, it is, however, necessary to check the gel for its suitability. A colorimetric method of determining the quality for the specific purpose and employing the same for checking the gels, has been developed. The time for the purification in this method is much less than what is usually employed, and yet neither the quality nor the sensitivity is affected. This is done by initially removing most ol the organic matters by heating at 340° C. for two hours and then digesting with nitiric acid for 48 hours. In the method suggested, the time applied for purification has been mentioned as seven days. It is found that purification is completed within 48 hours in this case applying initial heating and subsequent digesting instead of digesting it alone. The method of prepartion of the catalyst in the proposed method is different from that usually employed. In this case, it requires less time and is easier to manipulate. In the use of the detector tubes, colour comparison is proposed in this method to be done by comparing the change of colour produced with standard coloured gels instead of painted strips usually employed. Considerable amount of subjective error arising out of visual comparsion of coloured particles, with painted strips is thus minimised. Using different amounts of standard prussian blue and potassium dichromate solutions, the white silica gel is given different shades of colours which match well with the gel when reacted upon with air containing different percentages of carbon-monoxide. This technique is completely novel in its application. The detector tube produced by this method will be economical and the sensitivity of the tube would be comparable to the imported one.

The process has a wide scope of application. Ten parts per million carbon-monoxide present in air can be detected. Thirty to one thousand parts per million can be detected and estimated. The scope may even be extended to detection of ten thousand parts per million by decreasing the volume of sample passed.

The sensitivity of the tube is of the order of 10 p.p.m. i.e. air or gas containing upto ten part per million of carbon-monoxine can be tested for the obnoxious gas with the help of this tube. The scope of use will be extended to all places where carbon-monoxide is present to the extent of ten to one thousand parts per million.

AMERICAS AS INDIA'S TRADE PARTNERS

American countries fall in three distinct regions, namely, North America, Latin America and the Caribbean. North America although far distant from India, is one of her most important trade partners ever since the end of World War II. Besides the language facility, Indian businessmen have had quite a few encouraging factors responsible for the consistent growth of two-way trade with USA and Canada. For instance, Canada as a member of the Commonwealth extends commonwealth tariff preferences as also enjoys close commercial ties with India. Both U.S.A. and Canada have highly developed economies and account for about 20 per cent of the world's external trade. They have extended liberal assistance in the shape of loans and technical aid to India in her development plans. These factors have helped to develop her trade with them to the present level.

India's experts to U.S.A. during 1972-73 (the latest complete year for which information is available) amounted to Rs. 2760 million against Rs. 2630 million in 1971-72. Exports to Canada during these two years were Rs. 280 million and Rs. 390 million respectively. The total exports to this region thus accounted for 16 per cent of India's total exports in 1972-73 against 19 per cent in the preceding year. The fall in percentage share inspite of a slight rise in exports in 1972-73 indicates that exports to this region did not expand as much as to the other regions and that there is still a vast scope for expansion of exports to this region. It has been estimated that this market in near future offers a potential for Indian exports to the extent of Rs. 4500 million per year against the present level of Rs. 3040 million only.

Indian imports from this region in 1972-73 and 1971-72 were respectively Rs. 3300 million (Rs. 2250 million from U.S.A. and Rs. 1050 million from Canada) and Rs. 5320 million (Rs. 4190 million from U.S.A. and Rs. 1130 million from Canada) accounting for 18 percent and 29 percent of total imports during the respective years. The imports from these countries supply a good part of requirement of vital raw materials and machinery for Indian industries.

Imports of machinery and transport equipment from the region in 1972-73 amounted to Rs. 961 million against Rs. 1004 million in the previous year. Imports of iron and steel and other non-ferrous metals and ores during these years were valued at Rs. 183 million and Rs. 655 million respectively. Scientific and professional instruments accounted for Rs. 69 million and Rs. 65 million in 1972-73 and 1971-72 respectively. Paper and pulp imports were for Rs. 201 million and Rs. 281 million in the respective years. Fertilizers, vital for development of Indian agriculture were imported in these years to the tune of Rs. 434 million and Rs. 514 million. Imports of various food items, such as, wheat, milk, soyabean oil etc. accounted for Rs. 79.6 million and Rs. 1528 million in 1972-73 and 1971-72 respectively. Chemicals, sulphur and asbestos were other important items of imports from this region during these years.

The most important single item of exports to this region is jute manufactures which accounted for about half of total Indian exports to this region in the Sixties. Now with the development of exports of new items the share has gone down to 36 percent (Rs. 1091 million) in 1972-73 against 47 percent (Rs. 1418 million) in 1971-72. Exports of this item have been gradually declining because of heavy competition from synthetics and from Pakistan. Now with the decline of competition from the synthetics because of a steep rise in the prices of crude petroleum and cooperation between the jute industries in India and Bangladesh, it is expected that exports of jute goods will again pick up.

The next important item of exports to this region, cashew, earned Rs. 306 million in 1972-73 against Rs. 329 million in the previous year. Cotton manufactures including made-up garments come next. The export earnings from this item during 1972-73 were Rs. 271 million against Rs. 192 million in the previous year. An interesting development in this item is that exports of made-up garments almost doubled to Rs. 58 million in this year over Rs. 29 million in 1971-72. India's fish products exports which were introduced in this market only in the Sixties were worth Rs. 172 million in 1972-73 against Rs. 132 million in 1971-72. Tea and coffee fetched Rs. 136 million in each year. Another important growth item, namely, precious stones accounted for Rs. 166 million in 1972-73 over Rs. 87 million in the earlier year. Exports of engineering goods to this region are also expanding satisfactorily. These goods include such items as bicycles, sewing machines. sanitary fittings, handtools, machine tools, pipes and pipe fittings etc. Sugar earned Rs. 98 million

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and Rs. 162 million in 1972-73 and 1971-72 respectively. The fall in the farmer year is due to absence of exports to Canada during the year.

Apart from these items, other important exports during 1972-73 (with figures for 1971-72 in brackets) were leather and leather manufactures Rs. 71 million (Rs. 28 million), footwears Rs. 34 million (Rs. 34 million), woollen carpets Rs. 60 million (Rs. 34 million), handicrafts Rs. 68 million (Rs. 57 million), spices including black pepper Rs. 47 million (Rs. 43 million), mica Rs. 27 million (Rs. 23 million), castor oil Rs. 50 million (negligible), natural gums including shellac Rs. 52 million (Rs. 54 million), crude opium Rs. 36 million (Rs. 26 million), essential oils Rs. 11 million (Rs. 8 million).

It would seem that Indian exports to this region are still predominantly in traditional items. Even in the traditional group, however, new varieties, such as, carpet backing cloth in jute goods, made-up garments in cotton textiles, and instant tea, are having a larger share than what they had in the Sixties. New products, such as, bicycles, industrial fasteners, sewing machines, electronic components and other engineering products, marine products, footwear, precious stones (cut), jewellery etc. are potential growth points.

Latin America is predominently Spanish speaking and consists of twenty republics. Because of language difficulty, remoteness of the region and lack of contacts between the businessmen, India's trade with them has been of a marginal nature confined to export of jute and shellac from India and occasional imports of wheat, rice, cotton, uncut precious stones and sulphur. In fact, in the 'Fifties and early 'Sixties, 91 percent of exports to this region were jute bags. Exports of jute goods began to decline in 1966 because of stiff competition from Pakistan and introduction of bulk handling in the movement of grains.

The Indian Prime Minister's visit to this region in 1968 aroused much interest in businessmen on the two sides. As a result, three delegations of Indian businessmen have visited Latin America since then. They have identified a number of products on both sides which can be exchanged to their mutual advantage. As a result, India signed a contract for puchase of copper worth Rs. 500 million and lead worth Rs. 20 million from Peru. The non-traditional items identified for export from India to Latin America were railway equipment, mining equipment, cotton textile machinery, sugar mill machinery, power distribution equipment, central air conditioning, refrigeration equipment, compressors etc. Some projects for joint ventures were also identified. The two sides appreciated that as members of the group of developing countries they should take all possible steps for encouraging mutual trade and cooperation. Steps are also being taken by the concerned authorities for improving shipping services between India and Latin America.

India's exports to Latin America in 1972-73 were Rs. 42.24 million against Rs. 125.82 million in the previous year. Imports during 1972-73 were Rs. 231.80 million over Rs. 57.4 million in 1971-72. Although share of jute goods in India's exports has fallen, it is still over 50 per cent mainly to Argentina, Chile, Peru, Uruguay and Dominican Republic. Other items of export are shellac to almost all the countries in the region, handicrafts to Panama and engineering goods to almost all the countries in the region. Imports in 1972-73 from Latin America were specially high because of wheat imports valued at Rs. 163 million from Argentina. Other items of imports from the region are uncut precious stones from Brazil and Colombia, chemicals from Mexico and Brazil, and tanning substances from Argentina and Uruguay.

This region is very rich in non-ferrous metals and certain raw materials obtained from forestry which are of interest to India. All the countries in the region are endeavoring for planned development and require various engineering products and services which India is now in a position to supply. Thus, there is a great scope for expansion of trade between India and Latin American countries totheir mutual advantage.

Caribbean region consists of about seventeen small countries the most important being Trinidad, Jamaica, Guayna, Surinam and Netherland Antilles. Most of the countries in the region are English speaking and have a large element of population of Indian origin. India's exports to the region in 1972-73 were Rs. 22 million against Rs. 28 million in the previous year. The major items of exports are jute goods, cotton textiles, footwear, spices, feature-films and silk textiles. Generally speaking, exports are confined to items having an appeal to the Indian element of the population. The countries in this region have rather small population and have not developed adequate commercial ties with India. Indian businessmen are, however, anxious to set up small scale and cottage industries and it is in this sector they can be of most help to the Caribbean region.

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STATE TRADING CORPORATION AND EXPORT TRADE

The export earning of State Trading Corporation of India has witnessed consistent annual growth. From Rs. 105.10 million in 1964-65, the export rose to Rs. 1701.40 million in 1972-73. The Corporation has fixed a target of Rs. 2250 million for the year 1973-74. In addition to the export effort of STC, the other units under the Corporation, namely, Project Equipment Corporation, Handlooms and Handicrafts Export Corporation and Cashew Corporation of India have also contributed sizeably to the country's foreign exchange earning. The export value of these projects of STC stood at Rs. 101 million, Rs. 57 million and Rs. 37 million respectively during 1972-73. Thus, the group total of STC's export trade for that year was as much as Rs. 1896 million.

The STC group envisages an export trade of Rs. 2920 million during 1973-74. Over 75 per cent of these exports would be the individual share of STC alone. The largest increase of STC's own exports is to accrue from canalised exports of semi-processed leather and footwear followed by army software, food products and chemical items. Barring semi-processed leather, STC's exports of non-traditional items remained between 60 per cent to 65 per cent of its export turnover during the last five years.

The value of STC exports of non-canalised items was of the order of Rs. 273 million in 1968-69 and Rs. 436 million in 1972-73. These exports are projected to grow to the level of Rs. 810 million during 1973-74.

The Corporation has identified and developed several products for export and has been endeavouring to improve their unit value realisation. In the category of chemicals and pharmaceuticals, for instance, it has developed the export of items like gums and resins, fluorspar, paraffin wax, quinine salts, calcium hydroquinone, butanol lactate, barium carbonate, zinc oxide, and butyl acetate. The major destinations developed by the Corporation for these items are Iraq, Kenya, Libya, Mauritius, Sudan, Sri Lanka and Bangladesh. In respect of army software, STC has made considerable headway. The variety of army software now exported by the Corporation includes flannel, corduroy, camouflage nets, jeans, smocks denison, kit bags, parachutes, tents, beret caps, saddlery items, jungle boots, steel helmets, jericans, wireless sets, bridging and electronic equipment. The software exports of the Corporation increased manifold from Rs. 0.75 million in 1969-70 to Rs. 5.68 million in 1972-73. Principal markets for the army software are in the West Asian and South East Asian regions while some exports have also been made to countries like U.K., Canada and Australia. These exports are sought to be increased to Rs. 30 million by 1975-76. STC's efforts to promote castor oil exports have resulted not only in improving the quantum of export but the unit value realisation too. Similar instances can be cited testifying STC's ability in regard to product and market diversification in India's export trade.

STC pays special attention to the growth of small and medium scale sectors in India. The contribution of small scale sector in STC's exports has risen appreciably from 46 per cent in 1971-72 to 70 per cent in 1972-73.

The Corporation has also entered into special trading arrangements with some of the leading export and import houses of the world so as to secure new markets and step up exports of non-traditional and difficult-to-sell products.

ROLE OF MAHARASHTRA STATE IN EXPORT TRADE

The State of Maharashtra contributes substantially to India's export earning particularly in the field of non-traditional goods. Ever since its formation in 1960, the State government has taken up a number of measures in the field of export promotion. As a result, the State has come to hold a place of pride in India's export trade. The share of the State in India's total exports of non-traditional goods is about 35 per cent whereas its share in the country's total exports can roughly be placed at 15 to 20 per cent.

The major non-traditional items exported from Maharashtra are machine tools, cast iron and steel castings, agriculture pumps, sprayers, tractors, radiators, leaf springs, brake-lining, switchgear and control gears, PVC insulated cables and wires, electrical accessories and appliances, dyestuffs and intermediates, textile auxiliaries, decorative and industrial laminates, plastics, stoneware pipes, bananas, mangoes, processed foods and vegetables (jams, jellies, pickles, chutneys etc.), marine products (canned and frozen fish), biscuits and confectionery, hardboards, jacquard chaddars, readymade garments, neckties, rubber goods for surgical use, gems and jewellery, basic and fine chemicals, pharmaceuticals and drugs, cinematographic films, paper and paper boards and glass and glassware.

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Small-scale sector plays an important role in the export of Maharashtra and it is estimated that nearly 40 per cent of the State's exports are from the small units. Important items produced and exported by Maharashtra's small scale sector include electronic equipment and components, surgical instruments and hospital equipment, wires and wire products, electrical appliances and accessories, weighing machines and measuring instruments, stainless steel utensils and hospital ware, agricultural implements and machinery, small tools and hand tools, pressure stoves and lanterns, leather goods and footwear, rubber products for surgical use, insecticide formulations, powerloom and handloom products, crushed bones, hosiery goods, readymade garments, medicinal castor oil, paints and pigments, umbrellas and fittings, plastics, marine products-canned and frozen, processed foods–canned and bottled, cashewnuts, vegetable oils and cakes, paper products, playing cards, picture post cards, printed materials, gems and jewellery, handicrafts and cinematographic films.

Maharashtra produces nearly one-third of sugar in India while its share in the country's sugar exports is about 80 per cent. The state accounts for 28 per cent of the total production of processed foods while its share in India's total exports was estimated at 33 per cent during 1972-73. The Fisheries industry in the state is being developed in a planned manner and the percentage of exports of marine products through Bombay port has increased from 4 in 1965 to over 11 in terms of export value.

Comparative achievements of Maharashtra in export trade as compared to all India (figures in brackets) exports during the year 1971-72 were Cotton textiles Rs. 770 million (Rs. 1141 million), Engineering goods Rs. 570 million (Rs. 1170 million), Gems and Jewellery Rs. 378 million (Rs. 473 million), Sugar Rs. 96 million (Rs. 121 million), Basic chemicals Rs. 173 million (Rs. 315 million), Chemicals and allied products Rs. 110 million (Rs. 347 million) and Plastics Rs. 46 million (Rs. 63 million), according to the information received from the Directorate of Industries, Government of Maharashtra.

Handicrafts of Maharashtra enjoy reputation the world over. This industry is spread over in almost all the parts of the State, the important centres being Aurangabad, Paithan, Pen and Miraj. These centres are popular for Bidriware, Jewellery, Lacquerware, Clay-work, Paithani, Handprinting, Himroo, Cloth dolls, Musical instruments and Oxidised copper ware. The major customers of handicrafts from Maharashtra are U.S.A., Belgium Luxemburg, Hong Kong, Federal Republic of Germany, U.K., Japan and Switzerland.

At present, hardly 8 per cent of the total industrial production of Maharashtra goes into export trade. Considerable export potential remains untapped. With the progress of industrial development in the State, export potential for non-traditional goods is likely to increase substantially in the years to come.

INJECTABLES TO U.S.S.R.

M/s. Hoechst Pharmaceuticals Limited, Dugal House, Backbay Reclamation, Bombay–20, has recently secured a sizeable order worth Rs. 2.5 million from USSR for supply of injectables. It is the largest single order secured by them so far. Since 1969, their total exports of medicines totalled Rs. 25 million which were effected to about twenty countries abroad. During 1973 alone, the firm exported medicines to the tune of Rs. 10 million. USSR, Australia, Bangladesh, Japan, Mexico, Arab Republic of Egypt and South Korea are the specific countries in which their products have gained popularity.

The firm has been awarded the Basic Chemicals Export Promotion Council's export shield for 1969-70 for their outstanding export performance.

India's pharmaceutical sector has made good headway in the export field, particularly in the last decade. The industry has been securing foreign exchange in growing valume year after year. The exports rose from Rs. 40 million in 1968-69 to Rs. 103 million in 1972-73.

Medicaments, alkaloids, anti-biotics, vitamins and vaccines are the principal categories of pharmaceutical products sought in growing quantity by overseas markets. A well diversified range of markets import these products every year in which USSR, USA, UK and Federal Republic of Germany are the bulk importers. Among others, Nepal, Bangladesh, Sri Lanka, Poland, Switzerland, Hungary, Iraq and Australia are prominent.

India's production of drugs and pharmaceuticals during 1972-73 is estimated at Rs. 3600 million. Among the essential drugs whose output has increased substantially during 1972, included penicillin, streptomycin, amphotericin and erythromycin base, halogenated oxyquinolines, tolbutamide, chloropropamide, D.D.S. and its derivatives, INH, thiacetazone, procaine hydrochloride, all sulpha drugs, vitamins A,B,B-12, C and D2/D3, folic acid, chloroquin and amidoquin, caffeine, ephedrine, ferrous gluconate, pethidine Hcl, aspirin, paracetamol, analgin, strychnine, brucine and mecloxine are significant.

Among the new items developed and manufactured by the industry during the year are iodochlorohydroxyquinline, semi-synthetic penicillin (including ampicillin), tolbutamide, empty hard gelatine capsules, vitamin C, sodium ascorbate, sorbitol, thiacetazone and nicotinamide.

ELECTRICAL EQUIPMENT TO WORLD MARKETS

India offers a comprehensive range of electrical machinery, apparatus and appliances to world markets. The exports in the line are constantly witnessing uptrend from year to year. For instance, during 1972-73, the exports earned foreign exchange as much as Rs. 234 million as compared to Rs. 187 million in 1971-72, Rs. 161 million in 1970-71, Rs. 145.50 million in 1969-70 and Rs. 133 million in 1968-69.

The export range broadly includes electrical power machinery and switchgears, equipment for distributing electricity, domestic electric equipment, telecommunication apparatus, electric apparatus for medical purposes and radiological apparatus and other electrical machinery and apparatus.

Kuwait, Iran, Iraq, Muscat, Qatar, U.S.S.R., Sri Lanka, New Zealand, Sudan, Dubai, Malaysia, Thailand, Poland, Nigeria, Saudi Arabia, Federal Republic of Germany, U.K., Netherlands and Arab Republic of Egypt are the principal destinations.

M/s. Siemens (India) Limited, 130, Worli, Bombay-18, succeeded in exporting electrical equipment to the tune of nearly Rs. 18 million during 1971-72. In fact, their exports rose to this level from Rs. 9 3 million in 1969-70 and Rs. 10.50 million in 1970-71. For the year 1972-73, the firm's export value is estimated to cross the Rs. 20 million mark. They are hopeful of of stepping up the exports further in the coming years.

In the export range of the firm, cables occupy a significant place. The manufacture of these is undertaken by M/s. Cable Corporation of India which are the licencees of the firm. Singapore and Soviet Union are their significant customers for cables. Besides these, they have well diversified range of other overseas destinations which include developing as well as developed countries.

Their four plants–three located at Bombay and the fourth at Calcutta undertake production of switch boards, railway signalling equipment, X-ray and other electromedical equipment, switchgears and a variety of electric motors upto 315 KW. They are manufacturing these items in technical collaboration with M/s. Siemans A. G. of Federal Republic of Germany, a renowned firm in the line.

In their plans for expansion and diversification, the firm proposes to include power line carrier equipment, electronic control gear and dental X-ray equipment. Their plants for electric motors and switchgears are expected to play a vital role in the diversification programme.

In the area of railway signalling equipment, tokenless block instruments and point machines are to be added to existing range while a new series of circuit breakers has also been developed in the switch board sector. The products designed by them are being currently manufactured by a number of domestic firms in the line.

Achieving notable strides in the field of production since 1950 - the year in which they entered into production stream, the firm is consistently laying emphasis on inplant research for product development as also for establishing new product ranges. Considerable headway has been made by the firm in the field of import substitution in some of the vital areas of Indian economy, such as, defence, communication and transport. Their endeavour in the field has already saved a sizeable outgo of foreign exchange.

PROCESSED FRUITS ON EXPORT STREAM

Export trade in Indias' fruit products is picking up overseas demand in recent years. Some of the East European economies like U.S.S.R., have placed several repeat orders for mango juice and other products in recent years. During 1972-73, export trade in preserved fruits and fruit preparations earned foreign exchange at a value of Rs. 29.50 million as compared to Rs. 18.35 million in 1971-72 and Rs. 17.25 million in 1970-71. The increase in exports during 1972-73 over 1971-72 was over 61 per cent.

Mango juice constituted the major area of export growth during 1972-73. It fetched foreign exchange at a value of Rs. 20.36 million, accounting for the lion's share of the total export value. In 1971-72, the exports were of the order of Rs. 12.52 million. U.S.S.R. was the largest receipient having imported worth Rs. 15.27 million as compared to Rs. 8.15 million in 1971-72. Mango slice in brine which brought in Rs. 2.38 million as compared to Rs. 1.36 million was mainly purchased by U.K. and Poland at Rs. 1.37 million and Rs. 0.90 million respectively. Mango jam which secured Rs. 2.17 million during the year was mainly imported by U.S.A., while fruits preserved in syrups were mainly purchased by Poland, U.K., U.S.A. and Federal Republic of Germany.

Adding to the export endeavour of processed fruits sector of Indian economy, M/s. Vasundhara Canning Private Limited, 22-D, Brelvi Street, Bombay, secured export orders for processed fruit products at a value of over of Rs. 600,000 from overseas markets during the first seven months of 1973-74 (April-October, 1973).

During the entire year of 1972-73, their export turnover was of the order of nearly Rs. 730,000. During the year, their exports were directed to a number of countries which included even developed countries. They are hopeful of stepping their exports further in the coming years.

The firm's production profile of processed fruits and preparations covers canned fruit products, such as, mango pulp, mango slice, mango juice, banana pulp, chicoo pulp, papaya pulp and vegetables in brine.

India with its diverse agro-climatic conditions grows a variety of tropical, sub-tropical as well as temperate fruits and vegetables. India's fruits processing industry makes extensive use of mangoes, pineapples, guavas, grapes, citrus fruits, papaya, bananas, amla, bael, litchis, tomatoes, potatoes, peas, carrots, cabbages, onion, bitter gourd, paramal, lady finger, cluster beans, mushrooms, spinach, cauliflower, chillies and french beans.

CARPET EXPORTS UP

India's wool and woollen industry is making significant strides in exports in recent years. A large number of firms engaged in production of woollen goods contribute annually to the export growth of the industry. For instance, M/s. Oriental Carpet Manufacturers (India) Limited, Amritsar, (Punjab) secured in the second quarter of 1973-74, export orders for carpets at a value of Rs. 1.2 million from USA, Canada, and other countries of North and South America, U.K. and West Europe. The firm is well established in the manufacture of carpets and allied products in the line and exports to a well diversified range of destinations abroad.

India's export trade in wool and woollens fetched foreign exchange as much as Rs. 480 million in 1972-73 as compared to Rs. 358 million in the preceding year.

Accounting for about 44.5 per cent of the entire exports during the year, carpets, druggets and numdahs emerged as the largest area of export growth, replacing hosiery. These brought in Rs. 212.50 million as compared to Rs. 131.80 million in 1971-72. The rise in the export was mainly because of large offtake of natural fibre carpets by the Western countries and increase in the unit value per metre of woollen carpets.

Federal Republic of Germany was the biggest market for these items whose purchases rose to Rs. 80 million in the year from Rs. 42 million (1971-72). USA too imported more at Rs. 54.40 million as compared to Rs. 35.50 million. U.K., Canada, Netherlands and Sweden were significant among other buyers.

In the same year, woollen hosiery which constituted the next best category, earned Rs. 168.80 million as compared to Rs. 144.80 million in the preceding year. USSR continued to be the biggest market which bought worth Rs. 135.30 million alone accounting for the bulk of Indian supplies. In the preceding year, its imports totalled Rs. 117.80 million. Czechoslovakia and Libya were two other significant markets.

The export value of other items during the year was : raw wool Rs. 60 million (1972-73) against Rs. 35 million (1971-72); blankets Rs. 3.4 million against Rs. 2.23 million and shawls Rs. 2.88 million against Rs. 1.19 million. Shoddy wool, wool tops and worsted yarn knitting wool were other items in the line exported. Woollen and mixed fabrics and woollen ready-made garment exports, however, declined.

Annual production of carpets in India is estimated at Rs. 400 million. 85 per cent of the production is from centres in Uttar Pradesh and 10 per cent from Kashmir. Important carpet producing centres in India are Bhadohi. Mirzapore, Gopiganj, Kharmaria and Agra in Uttar Pradesh; Srinagar in Jammu and Kashmir; Panipat in Haryana; Jaipur and Bikaner in Rajasthan; Gwalior in Madhya Pradesh; Eluru and Warangal in Andhra Pradesh; Madras and Walajapet in Tamil Nadu and Obra in Bihar. Allied to the carpet weaving industry in Kashmir is Namdah - a type of hand-made felt, embroidered with cotton thread.

EXPORT TRADE IN MINERALS

The Minerals and Metals Trading Corporation of India organises the country's export trade in minerals like iron ore, manganese ore, ferro-manganese, mica and coal. The iron ore exports of the Corporation increased from 5.3 million tonnes in 1964-65 to 12.1 million tonnes in 1970-71. In 1972-73, the export supplies amounted to 10.6 million tonnes. A target of 13 million tonnes valued at Rs. 900 million has been set for 1973-74. The exports exceeded 8 million tonnes even during the eight months of the year (April-November 1973).

MMTC has concluded contracts with Japan for the supply of 9 million tonnes of iron ore during 1973-74. These are planned to be increased to 11 million tonnes in 1974-75 and 13.5 million tonnes in 1975-76. To East Europe, including Czechoslovakia, Rumania, Poland, Hungary and Bulgaria, the overall quantity of the Corporation's iron ore export is likely to increase to 3.5 million tonnes in 1973-74 as compared to 2.9 million tonnes in the previous year. Besides consolidating its position in the traditional markets of Japan and East Europe, MMTC has succeeded in securing a foothold in the difficult markets of West Europe.

In the competitive West European markets, U.K., Federal Republic of Germany, France, Belgium and Italy have been traditionally purchasing their requirements of iron ore from proximate sources in Scandinavia, Canada, West Africa and South America. Thus, the ore supplies from India were only in small quantities in the past. In view of the pick-up in the European steel industry, however, MMTC has succeeded in seizing larger markets in that region. During the current year (1973-74), export sales to the tune of 0.5 million tonnes have been secured through the Corporation from West Europe and deals have already been concluded for the export of 1.1 million tonnes to be supplied during 1974-75.

Manganese ore constitutes the next area of MMTC's export activity. India's total production of the ore has been in the range of 1.6 to 1.7 million tonnes per year of which 1 to 1.2 million tonnes have been exported. The Government of India have imposed restrictions on manganese ore exports of specified grade from 1973-74 onwards. The ore export containing more than 46 per cent Mn was not to be continued after March 31, 1973. Export of the ore bearing 35 to 45 per cent Mn has been reduced in stages. The ceiling for exports of manganese ore during 1973-74 was 89,000 tonnes in respect of high grade (46 per cent Mn and above), 170,000 tonnes in respect of medium grade (35 to 45 per cent) and 478,000 tonnes of low grade ore (35 per cent Mn and below).

In respect of ferro-manganese, India's annual production is around 160,000 tonnes. In view of the rise in indigenous demand exportable surplus has been somewhat depleted and during 1973-74. MMTC has finalised the sales of about 55,000 tonnes (Rs. 60 million) as compared to the original estimate of 75,000 tonnes (Rs. 70 million). Export of ferro-manganese slag was also canalised through MMTC. With a high manganese and silicon content, the slag has an export market as a substitute for silicious manganese ore. Against sales of 37,000 tonnes valued at Rs. 5 million (1973-74) shipments till November 1973 have been 18,950 tonnes valued at Rs. 2.55 million.

The export of processed mica was also canalised through MMTC effective from January, 1972. Indian mica is being exported to a large number of countries, the major buyers being U. S. S. R., Poland, Czechoslovakia, German Democratic Republic, Rumania, U.S.A., Japan, U.K., Federal Republic of Germany, France, Switzerland, Hong Kong and Australia. The total exports of the ore are shared in the proportion of 3:2 between the Rupee paymant countries and the general currency area. Against an export target of Rs. 140 million for 1972-73 MMTC's own oxport of mica for the year was as much as Rs. 184.80 million. The Corporation aims at an export target of Rs. 160 million for 1973-74.

RAYON AND SYNTHETIC TEXTILE EXPORTS FETCH MORE

India's export trade in Rayon and Synthetic textiles have registered an upward trend during the first half of 1973. The export was of the order of Rs. 76.90 million as against Rs. 35.10 million in the corresponding period of 1972, recording an increase of 119 per cent.

Excepting hsiery h and knitwear and tyre cord/yarn, other items recorded codsiderable growth rate during the period January-June 1973 as compared to corresponding period in the preceding year. Exports of rayon and synthetic fabrics earned Rs. 65 million as against Rs. 28.2 million in first half of 1972, contributing a major share in the overall export performance of rayon and synthetic products during Jaunary-June 1973. The share of this item alone amounted to 84 per cent with a rise of 130 per cent over the performance in January-Juue 1972.

Filament rayon fabrics improved from Rs. 17.1 million during January-June 1972 to Rs. 40.7 million in first half of 1973. Out of the total fabric exports of Rs. 65 million, the share of filament rayon fabrics accounted for 63 per cent. Brocade, crepe, dobby georgettee, satin, shirting, suiting and sarees were the main items exported.

Another item—spun rayon fabrics showed an increase from Rs. 1.84 million to Rs. 4.35 million in the first half of 1973, recording an improvement of 136 per cent, although this item had a smaller share of 7 per cent of the overall fabrics exports during this period. African countries were the main buyers of this item.

An increase of 160 per cent from Rs. 5.34 million in January-June 1972 to Rs. 13.80 million during Jaunary-June 1973 was registered in the exports of nylon fabrics. Polyester and polyester blended fabrics showed a moderate increase of 71 per cent. Its exports were about Rs. 3 million in January-June 1973 as compared to nearly Rs. 1.76 million during the same period in the preceding year. Exports of mixed fabrics during the first half of 1973 earned Rs. 3.08 million as against Rs. 2.17 million during January-June 1972.

Destination-wise, except Africa, all other Zones had an all round upward trend in their offtake. The Zone-wise exports in the first half of 1973 were : Asia (Rs. 21.4 million), Africa (Rs. 8.35 million), America (Rs. 8.43 million), Europe (Rs. 25.5 million) and Oceania (Rs. 1.28 million).

Exports of Rayon and Synthetic textiles amounted to Rs. 36.9 million in the year 1968-69 and have expanded almost five-fold during the nine month period of the current year (April to December, 1973) with a record performance amounting to over Rs. 177 million. As against this, the exports during 1972-73 were valued Rs. 106.3 million. It is expected that the performance during the current year will far exceed the export target of Rs. 185 million.

The improvement in the export performance bas been achieved by raising the unit value, introduction of higher unit value items and expanding the volume of exports. There has been an increasing trend in trade with U.S.A., Canada, Japan and European countries.

EXPORT TRENDS OF BASIC CHEMICALS, PHARMACEUTICALS AND SOAPS

Basic chemicals, pharmaceuticals and soaps in India's export trade, have registered a remarkable improvement during the period January-June 1973 as compared to the corresponding period in the last year. During this period, their exports were Rs. 278.62 million as against Rs. 165.82 million in the corresponding period of 1972. The country's export trade in these areas was of the order of Rs. 385.2 million during the year 1972-73 as against Rs. 351.5 million in the preceding year (1971-72).

A number of items under the purview of Basic Chemicals, Pharmaceuticals and Soaps have shown export increases in the first half of 1973. The export of dyes, pharmaceuticals and fine chemicals grew more than three-fold during the first six months of 1973—Rs. 146.20 million as against Rs. 41.42 million in the corresponding period of the last year. The items, such as, glycerine, soaps, detergents, cosmetics and toiletries constituted another growth point-Rs. 20.53 million as against Rs. 16.71 million. Essential oils secured Rs. 16.56 million as compared to Rs. 11.28 million. Export performance of crude drugs also witnessed rise from Rs. 24.13 million to Rs. 25.28 million. Among other categories whose exports have recorded sizeable rise were dyes, intermediates, alcohol and coal tar chemicals. The exports of these items recorded growth from Rs. 30.03 million to Rs. 31.60 million during the period under review. Another item, Agarbatties recorded growth from Rs. 7.30 million to Rs. 7.76 million. Herein, a special mention may be made in respect of items, such as, medicinal castor oil, antibiotic preparations, antidiabetic drugs, absorbent cotton wool/bandages, proprietory and patent medicines, benzidine dihydrochloride, carbon black, aluminium sulphate, rare earth chloride, tooth paste, psyllium husk, psyllium seeds and senna leaves and pods, which have contributed to increase in exports during the first half of 1973.

The export earnings of basic chemicals, pharmaceuticals and soaps would have been higher in the first half of 1973 but for the slight decline in performance of some of the items like inorgamic chemicals (from Rs. 27.81 million to Rs. 25.98 million), organic chemicals (from Rs. 4.45 million to Rs. 2.57 million) and agro chemicals (from Rs. 1.05 million to Rs. 0.55 million).

MORE FOREIGN EXCHANGE FROM HANDICRAFTS

The value of India's handicrafts including gems and jewellery aggregated Rs. 929.41 million during the first eight months of 1973-74 (April–November 1973) as compared to Rs. 779.05 million in the corresponding period of 1972-73. This would reveal an increase of over 19 per cent.

Exports of embroidered goods, shawls as artwares, ivory products, imitation jewellery, woodwares, woollen carpets, rugs and druggets including numdahs, carpets, rugs and durries etc. of cotton and miscellaneous handicrafts improved from Rs. 7.51 million, Rs. 0.54 million, Rs. 1 million, Rs. 8.76 million, Rs. 27.46 million, Rs. 137 million, Rs. 7.18 million and Rs. 41 million during the first eight months of 1972-73 (April-November 1972) to Rs. 16.79 million, Rs. 1 million, Rs. 1.68 million, Rs. 11.17 million, Rs. 32.59 million, Rs. 139.83 million, Rs. 7.34 million and Rs. 47.70 million during the first eight months of 1973-74 (April-November 1973) respectively. The exports of art metalwares, zari and hand printed textiles and scarves, however, declined. The constraint on exports of these items was due to rise in prices of raw materials.

The major markets for handicrafts were mainly the developed countries. The most important markets in the order of importance are the U.S.A., Belgium, Hong Kong, Federal Republic of Germany, U.K. and Japan. Other important countries where Indian handicrafts are exported are Switzerland, Netherlands, France, Canada and Singapore.

Gems and Jewellery earned Rs. 452.20 million during the first eight months of 1973-74 as compared to Rs. 593.35 million in the first eight months of the preceding year.

Export trade in handicrafts presents a consistent uptrend which was of the order of Rs. 193.40 million in 1961-62, Rs. 275.80 million in 1965-66, Rs. 803 million in 1970-71, Rs. 905.2 million in 1971-72 and Rs. 1306.24 million in 1972-73. The contribution of gems and jewellery to the handicrafts export trade was of the order of Rs. 788.20 million in 1972-73 as compared to Rs. 522.90 million in the preceding year. Handicrafts other than gems and jewellery earned Rs. 518 million against Rs. 382.30 million in the respective years.

INDUSTRIAL DEVELOPMENT AND DIVERSFICATION

OUTLINE OF TELECOMMUNICATION INDUSTRY

In a vast sub-continent like India, the significance of adequate telecommunication facility cannot be overemphasised. The progress achieved by Indian economy in the short period of its free existence should indeed be rated remarkable, viewed against the background of the limping progress of the industry made in the pre-independence era. But the problem of import substitution and indigenisation of a wide range of telecommunication products continues to attract the close attention of Indian planners and the major emphasis during the Fifth Five–Year Plan period would be to step up domestic production of the equipment so as to reduce import dependence considerably.

The number of telephones (direct exchange lines) in India has been constantly increasing from about 810,000 by 1968-69 to about 1.3 million by 1973-74. Yet domestic demand for telephones has been ever on the increase and the planned programmes in the sector aim at achieving a rapid pace of growth in production to be able to meet the increasing demand at home.

Besides improving telephone production, countrywide facilities for long distance transmission are sought to be improved and the production capacity of indigenous factories is to be stepped up to meet the requirements of the Posts and Telegraph Departments of the Government of India so that their dependence on direct imports would be reduced to the minimum. The twin objective of the Fifth Five–Year Plan in regard to telephones refers to the wiping out of the ever increasing waiting list for local telephones by 1982-83 and to progressively reduce and eventually eliminate the manual exchanges by 1986.

The telegraph system in the country is also sought to be expanded considerably. About 7,000 new telegraph offices are proposed to be opened during the Fifth Plan period against 2450 in the Fourth Plan. The number of additional public call offices to be opened in the Fifth Plan would be 5000 against 1760 in the Fourth Plan. About 32 new telex exchanges with 10,000 lines capacity and 4 circuit switching transit telephone exchangs in four major cities of India are proposed in the Fifth Plan.

The Plan lays particular emphasis on indigenous production of equipment in the line. Notwithstanding large development programme in the Fifth Plan, the direct foreign exchange requirements are estimated to be Rs. 550 million against Rs. 580 million in the Fourth Plan. With a view to improving production base, not only the existing capacity in the factories will be increased but sub-contracting of components and ancillarics would be encouraged so that the main factories can concentrate on the production of major items.

M/s. Indian Telephone Industries Limited is the major supplier of various equipment required by the Posts and Telegraph Department of the Government of India. The company's factory at Bangalore has three divisions, namely, Strowger, Cross bar and Transmission. An ancillary unit of the company which manufactures spare parts of telephone instruments has been started in the State of Jammu and Kashmir. Also two projects at Naini near Allahabad - one for the manufacture of transmission equipment and the other for the telephone industries - have gone on production stream. A new factory for the production of switching equipment is also to be set up at Rae Bareli. The existing capacity of swtiching equipment of M/s ITI is 150,000 lines of strowger type and 100,000 of crossbar type. These capacities are proposed to be stepped up to 200,000 lines each in the Fifth Five Year Plan. The Rae Bareli switching equipment factory is to have an annual capacity of about 300,000 lines. It is estimated that M/s. ITI will produce about 1.38 million telephone instruments at their Bangalore factory and 1.5 million instruments at the Allahabad factory (Naini) making a total of 2.88 million instruments. Against an estimated requirement of about Rs. 2100 million for transmission equipment in the entire Fifth Plan period, the present annual capacity works out to Rs. 150 million per year (Rs. 90 million at Bangalore factory and Rs. 60 million at Naini factory). Besides expanding the existing capacities to Rs. 200 million per year for each of these factories, two new factories are proposed to be set up for producing transmission equipment worth about Rs. 100 million per year from each of the units.

Cables constitute another item required in the telecommunication industry. The capacity of M/s. Hindustan Cables Limited (Roopnarayan factory) for the manufacture of co-axial cables and underground cables is sought to be expanded considerably. A new factory is being set up at Hyderabad for the manufacture of these cables while yet another factory is also being set up in Kerala for the production of underground cables.

Teleprinters constitute another area of progress in the telecommunication industry in India. M/s. Hindustan Teleprinters Limited have developed a production capacity of 6,000 units of teleprinters. The production of the factory is to be deversified in the Fifth Plan and the main scheme will relate to developing capacity of product of about 4000 electronic typewriters per year. The manufacture of peripherals required for computers has also been planned. Capacity for electronic PIBX exchange is proposed to be set up.

Television and radio broadcasting are two important mass communication media. While radio broadcasting facility has been amply improved, some beginning in the television sector has been made in recent years. T.V. centres are already operating in Delhi, Amritsar, Bombay and Srinagar and the work at Madras, Calcutta, Lucknow and Jullundur is in progress. With the completion of these schemes, television coverage will be about 17 per cent of India's population. As regards radio, the present-coverage is about 90 per cent of the population by medium wave. The ultimate objective is to reach 100 per cent of the population by medium wave. In the Fifth Plan period, the coverage is to be increased to about 93 per cent.

IRRIGATION IN INDIA—PROGRESS AND POTENTIAL

Indian economy is estimated to possess 175 million hectares of arable area of which 142 million hectares are expected to be under cultivation by 1973-74. The ultimate irrigation potential in the economy is currently estimated at 107 million hectares of land both from the surface (72 million hectares) and ground water sources (35 million hectares). Against this potential, the irrigation facility would be 43 million hectares only by 1973–74—27 million hectares from surface water and 16 million hectares from ground water. In addition to the utilised irrigation capacity, the potential capacity of 45 million bectares is also expected to be available in the economy by that year.

The development of irrigation potential over the plan period would make an interesting study. At the beginning of the first five year plan (1950-51), the position regarding the creation of potential and its utilisation was 22.6 million hectares while by the end of the Fourth Plan (1968-69), the potential was of the order of 37 million hectares and its utilisation was 36 million hectares. It is against this background that in 1973-74 that 45 million hectares of potential and 43 million hectares of utilisation should be viewed.

The Fifth Five-Year Plan beginning from 1974-75 proposes to extend the irrigation facilities substantially. The plan has a dual objective by creating further irrigation potential and improving the utilisation of the created potential as well as its efficient management by encouraging maximum productivity. While making projections for the Fifth Plan, the irrigation policy of the Government of India is to keep certain principles in mind; the execution of medium irrigation schemes will be expedited; of the major irrigation projects that are in an advanced stage of construction will be completed as soon as possible; older irrigation projects will be modernised and priority will be accorded to those new schemes which would benefit drought-affected and backward areas.

The irrigation potential to be created during the Fifth Plan is expected to be 6.2 million hectares. Its utilisation in the plan period is estimated to be in the neighbourhood of 5.2 million hectares. In addition to the major and minor irrigation facilities thus created, minor irrigation is to add 6 million hectares–4.5 million hectares from ground water, 1 million hectares from surface irrigation from storage and diversion schemes and 0.5 million hectares by way of lift irrigation from streams or rivers.

The Fifth Plan envisages sizeable advance in the field of irrigation research. Applied research in irrigation, hydraulics, soil mechanics and construction materials is already conducted in the Central Water and Power Research Station, Poona, Central Soils and Materials Research Station at Delhi and other research stations set up in the various States in the country. The activities of these organisations are sought to be increased manifold in view of the larger commitments to take up the job by the Governments to increase irrigational facilities during the fifth plan.

Flood control seems to be an important aspect of irrigation facilities in India, as much as the aspect of drought control. Floods in the rivers Ganges and Brahmaputra basin in India are almost an annual feature and pose serious problem of inundation and river erosion. Also the long sea coast in the country is subject to coastal erosion at different places. The acute problem in the state of Kerala where almost 320 kilometres of the coastline are constantly under erosion attack, the total area that can be possibly protected has been assessed to be about 16 million hectares out of a total area of about 20 million hectares liable to floods. Data on flood damages reveal that on an average floods affect an area of 6.7 million hectares including 2.6 million hectares under crops. During 1953-72, the annual damage caused mostly to crops, houses and public utilities has been estimated at Rs. 1260 million. This is in addition to the indirect losses resulting from the breakdown of communications and essential services as also the expenditure to be incurred on relief operations. It is in view of the seriousness of the flood control problem that the Indian planners have earmarked more funds in the Fifth Five-Year Plan than in the previous plan periods—Rs. 3010 million against Rs. 1330 million. It is anticipated that the Fifth Plan will provide for a reasonable protection to about 1.8 million hectares. The plan includes the construction of new embankments and raising and strengthening of the existing ones and providing channels and multi-purpose reservoirs and the like.

The Indian economy has the largest irrigated area in the world. The measures sought to be taken during the Fifth Plan period are expected to improve the irrigational infrastructure of the economy further and reduce its dependence on the whims of monsoons.

FACTS ON COTTON TEXTILE INDUSTRY

India's production of cotton yarn and cloth respectively stood at 972 million kgs. and 8015 million metres in 1972. The share of mill sector in the cotton cloth industry was 4245 million metres while that of the decentralised sector was 3770 million metres. The production target by 1978-79 has been placed at 1300 million kgs. for cotton yarn and 10,406 million metres of cotton cloth (5600 million metres in the mill sector and 4,800 million metres in the decentralised sector). The export target for the mill sector has been placed at 45 million kgs. of yarn and 1300 million metres of cloth by 1978-79.

To be able to achieve the increase in output, the spinning and weaving capacity of the cotton textile industry in the country is sought to be increased from 18.2 million spindles in 1972 to 23.9 million spindles in 1978-79 and from 208,000 looms to 293,510 looms. Thus an addition of 5.7 million spindles and 85,510 looms are to be created in the organised sector over and above the installed capacity at the end of 1972.

In recent years, authorisations have been issued by the Government of India for installation of new spindles in the cotton textile industry to the extent of 2.25 million spindles. Also 13,500 additional looms have been approved in the organised sector. By 1973-74, these authorisations are expected to reach the Fourth Plan target level of 2.5 million spindles and 18,000 looms.

Besides the programmes of installing additional capacity, the textile machinery industry in the country is also sought to be improved.

The Third Five - Year Plan period in India witnessed a restrictionist policy in regard to expansion of cotton textile mills industry. Subsequently, the policy was reviewed and liberalised and the requirements of cotton textiles industry in 1973-74 were assessed at 9350 million metres and exports of 800 million metres. The Fourth Plan target of 9350 million metres was divided into 5100 million metres for the mill sector and 4250 million metres for the decentralised sector.

To achieve the desired level of expansion in the mill sector, the Indian Government decided in September 1971 to permit the expansion of the industry by the installation of 2.5 million spindles and 18,000 automatic looms during the Fourth Plan. In regard to expansion of loomage, emphasis is laid on the installation of wide-width terry towel, canvas, duck and corduory looms in order to promote the output of exportable fabrics.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

CORRUGATED CLAY SHEETS AS ROOFING MATERIAL

Clay products like corrugated clay sheets, pipes and tiles with improved tensile strength have been produced in India by modifying ordinary brick clay through admixture with certain agents. The products do not warp or crack during drying or firing. Besides, the techniques of production being simple, no heavy machinery is required and the production of corrugated clay materials can be undertaken as a cottage industry in rural areas.

The Central Building Research Institute (CBRI), has attempted to improve the strength of ceramic bodies in general, with a view to improving the tensile strength of fired clay products as ordinarily produced from brick clays in 15-20 kg. per cm. The higher tensile strength that can be obtained as a result of CBRI's efforts will be in the range of 100-140 kg./cm.

The maximum tensile strength in fibres is obtainable with metallic and non-matallic oxides. Based on this principle, the composition of the clay has been so modified as to increase the tensile strength of the fired clay product to a value as high as 150 kg./cm. or to reduce it to a very low value which may be taken to be practically nil. In other words, the inter-granular adhesion can be increased or decreased within limits.

NEW DEVICE FOR DETECTING GROUND WATER

A simple, portable and inexpensive device known as D.C. Resistivity Meter has been developed by the scientists of the National Geophysical Research Institute (NGRI), Hyderabad, Andhra Pradesh.

The electric resistivity method is a potential geophysical tool in the exploration of ground water. The electric characteristics of the various earth layers studied by this tool help the field geophysicists in locating and tapping the ground water.

The principle of operation is simple. The ground water by its presence in a particular place, makes the earth layer reflect its exact location. The device developed consists of a milliammeter which measures the current sent into the ground and a voltmeter for measuring potential developed across the ground.

The accessories required include two or three power packs for power supply, two iron stakes which serve as current electrodes and two non-polarizable electrodes for potential electrodes. The powerpacks are loaded with 60 drytorch cells of 1.5 volts in series in each pack, thus providing a voltage of 90 volts.

The device in fact, is a boon particularly in those areas affected by droughts. Besides, it is inexpensive and easy to operate. Resistivity meters are being manufactured by NGRI indigenously and are being supplied to various organisations and universities on order at a cost of about Rs. 4000. On an average, the expenditure for carrying out these investigations come to about Rs. 250 per village.

The points located by geophysical surveys on ground are followed up by open-dug-wells or drilling bore wells to tap the indicated water underground. Drilling rigs of suitable specifications are used.

The NGRI has been carrying out geophysical investigations for groundwater on request from various state governments and other private organisations. The NGRI during the last one year has carried out the investigations in the several drought areas of Andhra Pradesh, Maharashtra and Punjab.

The NGRI is planning to procure a few drilling rigs with a view to take up the drilling work also along with the investigations for groundwater.

SUBSTITUTE FOR BURNT CLAY BRICKS DEVELOPED

Keeping in view the shortages and spiralling prices of burnt clay bricks, the Regional Research Laboratory (RRL), Jorhat, has recently developed a suitable substitute brick, based on paddy husk, as raw material, which can be used for small constructions. A brick wall constructed out of these bricks can withstand many seasons.

In the process developed by RRL, paddy husk is pretreated to remove unwanted elements and mixed with suitable quantities of filler, binder, other chemicals and water. The above mix is then fed into a hand operated brick making machine to get bricks. The bricks are then cured for a minimum period of seven days and used for construction. The bricks can be made at any construction site. No firing is required in this process. Such bricks have manifold advantages. They are cheaper, light in weight, easy to handle and have better insulation. Moreover, their production is not affected by seasonal changes.

The bricks which have been tested as per Indian Standard Institution specifications IS : 1725-1960, have the following properties : Compressive strength–25 Kg./Sq. cm as against 18 Kg./Sq. cm for soil cement blocks ; Density : 1.50 gms as against 2.0 gms for clay bricks ; Weathering test conforms to the above IS specifications and Moisture absorption in 21 hours is 12 to 14 per cent as against allowable absorption of 15 per cent.

The main raw materials required for the manufacture of these bricks are soil, paddy husk, cement and some chemicals. All are easily available indigenously. The major items of equipment required are mixer–1 (electrically operated), brick making machine (3 Nos), buckets and weighing machine. All these are also easily available indigenously.

INDO-AFRICAN TRADE

Africa consists of about 56 countries and territories. The six countries in the North, namely, Arab Republic of Egypt (ARE), Sudan, Algeria, Libya, Tunisia and Morocco are more a part of West Asian Arab bloc rather than Africa. Most of the other fifty countries have affiliations with one or the other European country. As such, their external trade was and still is to some extent oriented towards their old associates. France has granted the status of Associates to the countries formerly under her possession.

India has good trade relations with all these countries. However, there is a complete ban on trade with South Africa, Rhodesia and Portuguese possessions in Africa. India's exports to this region (excluding the aforsementioned Arab countries) during 1972-73 were valued at Rs. 427 million against Rs. 526 million in 1971-72. The import bill from this region for the two years was Rs. 848 million and Rs. 822 million respectively. Thus, in 1972-73, India's imports increased marginally but exports declined by about 19 per cent over the last year.

India's imports come mostly from Congo (Brazzaville), Congo (Kinshasa), Ghana, Kenya, Tanzania, Uganda and Zambia while major exports are directed to Dahomey, Ethiopia, Ghana, Kenya, Malawi, Mauritius, Nigeria, Sierra Leone, Somalia, Swaziland, Tanzania, Uganda and Zambia.

East African Community comprising of Kenya, Tanzania and Uganda is India's most important trading partner. In 1972-73, they accounted for 23 per cent of Indian exports and 43 percent of imports. Exports to Kenya during the year were valued at Rs. 55 million against Rs. 79 million in the previous year. The export value of the major commodities supplied to Kenya in the year with the figures in brackets indicating the exports in the previous year was : medicinal products Rs. 2.5 million (Rs. 3.0 million), paper and paper board Rs. 1.7 million (Rs. 1.8 million), textiles Rs. 2.8 million (Rs. 8.3 million), jute manufactures Rs. 2.7 million (Rs. 5.4 million), iron and steel products Rs. 4.4 million (Rs. 9.4 million), metal manufactures Rs. 8.7 million (Rs. 5.8 million), machinery Rs. 9.6 million (Rs. 9.3 million), transport equipment Rs. 5.4 million (Rs. 5.3 million) and cinema films Rs. 2.2 million (Rs. 2.5 million).

Exports to *Tanzania* during 1972-73 were valued at Rs. 30 million against Rs. 41 million in 1971-72. The major items of exports during 1972-73 with comparative figures for the previous year mentioned in brackets were : medicinal products Rs. 1.3 million (Rs. 0.5 million); jute manufactures Rs. 12.9 million (Rs. 18.5 million); metal manufactures Rs. 1.5 million (Rs. 1.2 million); machinery Rs. 2.5 million (Rs. 3.6 million); transport equipment Rs. 3.6 million (Rs. 1.5 million) and cinema films Rs. 0.5 million (Rs. 1.0 million).

Exports to *Uganda* during 1972-73 were valued at Rs. 11.3 million against Rs. 29.5 million in the earlier year. Important commodities exported in the years under review were : medicinal products Rs. 0.6 million (Rs. 2.3 million), textiles Rs. 0.9 million (Rs. 5.9 million); jute manufactures Rs. 1.9 million (Rs. 1.4 million) machinery Rs. 9.3 million (Rs. 10.2 million) and transport equipment Rs. 1.3 million (Rs. 4.1 million).

Indian imports from the East African Community during 1972-73 were valued at Rs. 354 million against Rs. 391 million in the previous year. The important items of imports in 1972-73 were : raw cashew Rs. 230 million (Rs. 154 million); raw cotton Rs. 51 million (Rs. 162 million); and wattle bark Rs. 27 million (Rs. 20 million).

India has a heavy adverse balance of trade with *Zambia*. India's exports in 1972-73 were valued at Rs. 47.2 million against Rs. 59.3 million in the previous year. Important commodities were silk textiles Rs. 5.5 million in 1972-73 and Rs. 2.5 million in 1971-72; cotton made-up items Rs. 8.5 million and Rs. 11.8 million in the respective years; jute manufactures Rs. 13.6 million and Rs. 19.6 million; bicycles Rs. 1.6 million and Rs. 3.9 million and metal manufactures Rs. 2.0 million and Rs. 2.9 million. Imports from Zambia were up from Rs. 209 million in 1971-72 to Rs. 278 million in 1972-73 and were confined to two item, copper and zinc.

The two *Republics of Congo* come next in importance. India's exports to them during 1972-73 amounted to Rs. 8.2 million against Rs. 5.4 million in the previous year. The major item of exports–jute goods, improved from Rs. 3.1 million in 1971-72 to Rs. 4.3 million in 1972-73. Imports from these countries also increased from Rs. 64.4 million in 1971-72 to Rs. 81.7 million in 1972-73, the major items being copper Rs. 50 million and Rs. 37 million in 1972-73 and 1971-72 respectively, zinc Rs. 13 million and Rs. 17 million, potassium chloride Rs. 9 million in 1972-73 only and precious stones unworked Rs. 6.6 million and Rs. 9.8 million in the respective years.

Nigeria on the West coast is the most important market for Indian products. Exports during 1972-73 declined marginally to Rs. 96.5 million from Rs. 98.9 million in the earlier year. The exports of cotton textiles to this market declined from Rs. 23.8 million in 1971-72 to Rs. 16.3 million in 1972–73.

Exports of machinery during 1972-73 were at Rs. 11.6 million against Rs. 10.5 million in the previous year. Transport equipment in 1972-73 was valued at Rs. 31.8 million against Rs. 36.1 million in 1971-72. Metal manufactures worth Rs. 3.8 million wete exported in 1972-73 as compared to Rs. 3.3 million in 1971-72. Scientific instruments exports were valued at Rs. 3.0 million and Rs. 2.5 million in the respective years. Other important items exported to this country were essential oils, plastic manufactures, medicinal products, iron and steel products and footwear. Imports from this country into India during these two years were negligible.

Ghana on the West coast is another important trade partner of India. Exports during 1972-73 were only Rs. 6.8 million against Rs. 11.8 million in the previous year. The major items of exports i.e. machinery declined from Rs. 6.9 million in 1971-72 to Rs. 3.1 million in 1972-73. Other items of exports to this country are cotton manufactures and rubber products. Indian imports from this country increased from Rs. 5.4 million in 1971-72 to Rs. 6.4 million in 1972-73. Important items were manganese (battery grade) (Rs. 4.1 million and Rs. 2.2 million), pearls and other precious stones (Rs. 1.1 million and Rs. 3.5 million). Cocoa beans are also imported from this country.

Dehomey Republic purchased Indian goods worth Rs. 13.4 million and Rs. 7.6 million in 1972-73 and 1971-72 respectively, almost the whole of it being in the shape of cotton fabrics. Similarly export to *Liberia* at Rs. 4.4 million in 1972-73 and Rs. 3.8 million in 1971-72 are limited to cotton textiles. Trade with *Sierra Leone*, another country on the West coast follows a more or less similar pattern. Exports during 1971-72 and 1972-73 were valued at Rs. 12.7 million and Rs. 14.8 million respectively. Cotton manufactures worth Rs. 9.4 million and Rs. 11.5 million were exported during these years. Other items of exports were tobacco and footwear. Imports from all the three countries are negligible.

India's exports to *Malawi* declined marginally from Rs. 13.2 million in 1971-72 to Rs. 12.2 million in 1972-73. Exports of jute goods were Rs. 1.6 million and Rs. 2.2 million in the respective years, while machinery and transport equipment fetched Rs. 4.1 million and Rs. 3.2 million during these years. Other important items of export are aluminium, cotton fabrics, umbrellas and spices. *Swaziland's* purchases from India are confined almost entirely to jute manufactures, the value of exports in 1971-72 and 1972-73 being Rs. 19.8 million and Rs. 17.0 million respectively. *Mauritius*, an island on the East coast, buys a wide variety of Indian goods. The value of exports in 1971-72 and 1972-73 was Rs. 16.5 million and Rs. 19.1 million respectively. Cotton fabrics worth Rs. 4.1 million and Rs. 3.6 million were exported in the respective years. Cinematographic film exports were valued at Rs. 1.7 million and Rs. 2.1 million in these years. Machinery and transport equipment valued at Rs. 1.8 million and Rs. 2.1 million was exported in 1971-72 and 1972-73 respectively. Other important items of exports are spices, cereal products, medicinal products, silk fabrics, iron and steel, other metal manufactures and footwear. India's imports from these countries are negligible.

Ethiopia and Somalia are very near to India. Exports from India to Ethiopia during 1971-72 and 1972-73 were valued at Rs. 20.5 million and Rs. 19.6 million respectively. The figures for exports to Somalia during these years were Rs. 13.1 million and Rs. 13.3 million. Major items of exports to Ethiopia during 1972-73 with comparative figures for the previous years in brackets were : cotton fabrics Rs. 6.7 million (Rs. 6.1 million), food preparations Rs. 2.0 millian (Rs. 4.1 million); cosmetics and toilet preparations Rs. 1.7 million (Rs. 1.5 million), agarbattis Rs. 1.6 million (Rs. 1.4 million), machinery Rs. 1.6 million (Rs. 1.7 million), spices Rs. 0.7 million (Rs. 0.8 million), jute mauufactures Rs. 0.8 million (Rs. 1.3 million). Somalia's main purchases from India during the two years were : cotton manufactures Rs. 2.9 million (Rs. 2.0 million) and tobacco Rs. 4.5 million (Rs. 7.1 million). Indian imports from these countries during the period under review were negligible.

It would be noticed from the above analysis that India's imports from the African region are rising slowly. The major items are essential raw materials for Indian industries viz. copper, raw cashew, raw cotton, zinc and precious stones. India's exports are mainly cotton textiles, machinery of various types, transport equipment, tobacco, spices, cinematographic films and medicinal products. The quantum of trade is however, comparatively small. In view of the heavy adverse balance of trade against India it would be worthwhile if the African economies could consider diversifying their imports from India on purely commerical consideretions; the representative areas where Indian supplies could be improved are engineering products, machinery, transport equipment, chemical products, footwear and clothing.

Apart from Morocco, Sudan, Tunisia and the Arab Republic of Egypt which are not covered in the present analysis of Indo-African trade review, India has trade agreement with Uganda which aims at conducting mutual trade on the basis of most-favoured-nation treatment as also diversifying the two way trade traffic.

Apart from the growing commercial contacts, between India and the African region, India's technical know-how is also being supplied to various African countries in the form of joint industrial projects. The Indian and African economics are in varying stages of development. Yet there is a wide scope for mutual industrial collaboration on the basis af complementarity and comparative cost advantages. Already quite a few projects are coming up in the African countries with the Indian assistance. The African countries where such projects have either already gone on production stream or are under implementation include Ethiopia, Ghana, Kenya, Libya, Mauritius, Morocoo, Nigeria, Tanzania and Uganda. The manufacturing areas in which the joint collaboration projects are coming up include textiles, soaps, agricultural tractors, cement, readymade garments, mosaic tiles, rolling shutters, corks, sugar, jute mills, solvent extraction, room air conditioners, steel processing and tyres and tubes. ☐

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AUTOMOBILE ANCILLARIES EARN MORE FOREIGN EXCHANGE

Recording two fold increase over the export performance in the preceding year, M/s. Motor Industries Company Limited (MICO), Bangalore (Karnataka), increased their exports sharply to an all time high at Rs. 36 million during 1973. The firm-manufactured automobile ancillaries and industrial products were imported by a well diversified range of overseas markets during the year. Among the firm's customers abroad, Federal Republic of Germany, a highly developed market is significant because of its bulk imports and this amply proves of the high quality of Indian automobile products and their price competitiveness in international markets. The firm's exports to countries in South East Asia and East Europe too improved sizeably during the year. Apart from these, a number of further firm enquiries has been received by the firm from many other countries like the Soviet Union and Czechoslovakia.

The company, in fact, have to their credit improved export turnover from year to year. For instance, their exports which were of the order of only Rs. 5.8 million in 1969 rose to Rs. 8 million in 1970 and further increased to Rs. 12 million in 1971. During 1972, these again shot up to fetch Rs. 17 million and reached the maximum level in 1973, as mentioned above. MICO have earlier bagged a gold medal from the Mysore State Export Promotion Advisory Board for their outstanding export performance during 1970-71.

The production profile of the Bangalore Company covers spark plugs for petrol engines, diesel engines and fuel injection equipment. In addition to this, they also undertake manufacture of other automobile products and household and industrial items which cater to the requirements of vital sectors of economy, such as, agriculture and transport (rail, road and sea). Because of high precision and modern engineering designs, MICO's products are well received at home and abroad. These products are used in the manufacture of road vehicular diesel engines, stationary diesel engines (mainly used for agricultural pumping sets) and petrol engines (in motor cars, motor cycles, scooters and agricultural sprayers). From 1971, MICO are manufacturing these items in technical collaboration with a West German firm. They are currently engaged in setting up their new plant at Nasik in the State of

Maharashtra and recently obtained licence to expand their capacity in respect of most of their products.

India's export trade in automobiles and ancillaries was of the order of Rs. 160 million during 1972-73 as compared to Rs. 149 million in the preceding year. In the comprehensive range of engineering products that are supplied abroad, automobiles and accessories occupy a significant place because of their capacity to fetch sizeable foreign exchange every year.

During 1972-73, trucks, lorries, motor vehicle initial equipment, engine mounted chassis for tractors and other chassis, jeeps and landrover type of vehicles, auto-rikshaws, special purpose lorries, motor cycles, motor scooters and engine mounted chassis for passenger motor cars were the various types of vehicles supplied to a well diversified range of markets, such as, Arab Republic of Egypt, Nepal, Yugoslavia, Sri Lanka, Nigeria, Saudi Arabia, Iran, Kuwait, Singapore, Sudan, Tanzania Republic and Bangladesh. Besides vehicles, a broad range of automobile ancillaries, such as, nozzles, delivery valves, filters (oil, air and fuel), motor starters, wheels and rims, shock absorbers, spark plugs, brake assembly, ignition coils, voltage regulators, distributors, crankshafts, pistons, cylinder liners, engine valves, carburettors, fuel pumps, rediators, coves, copes and heat exchangers and hydraulic pumps and other replacement parts are supplied to overseas markets.

The industry is making good headway in the field of import substitution. The constant endeavour to increase indigenous content in the manufacture is yielding fruitful results, reducing the import content as low as 5 per cent in some of the important lines of ancillaries manufacture.

STORAGE BATTERIES ON EXPORT STREAM

India-manufactured batteries and accumulators are picking up overseas demand steadily. From Rs. 25.57 million in 1971-72, the exports improved to Rs. 28.40 million in 1972-73.

During 1972-73, flash light and other primary batteries secured the bulk of foreign exchange at a value of Rs. 11.50 million while wet-cell primary batteries were supplied abroad at a cost of Rs. 1.5 million. Czechoslovakia and Nepal were principal customers of flash light batteries while Sudan and Nepal were the significant buyers of other primary batteries. Poland and Federal Republic of Germany were two important destinations for wet-cell primary batteries, among others.

In the same year, acid type accumulators earned Rs. 3.80 million and these were mainly bought by Poland and Soviet Union. Apart from these, other accumulators secured as much as Rs. 11 million. U.S.S.R. and Poland were again the leading importing markets because of their bulk purchases.

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M/s. Amco Batteries Limited, Bangalore Karnataka (Mysore), have a proven record of earning foreign exchange in growing volume every year. For instance, during 1973, their exports of batteries were of the order of Rs. 6.5 million and during the current year (1974), these are estimated to cross the Rs. 10 million mark. Their list of buyers abroad comprises a well diversified range of markets, which include developing as well as developed markets too.

The firm's export order books are full for the next 12 months and have export orders to the tune of over Rs. 60 million to be fulfilled within the next three years.

Claimed to be the oldest leading acid storage battery manufacturing unit in the country, the firm went on production stream way back in 1933. The firm mainly manufactures acid storage batteries and allied items in the line.

They have active plans for expansion with a view to enlarge their activities to undertake manufacture of batteries to the highest international quality standards for every type of application. Only recently, they have converted their existing plant into the industrial batteries division. Besides, they have built up a modern large plant known as Automotive Batteries Division on Bellary Road in Hebbal, Bangalore for manufacturing motor vehicle batteries.

They have entered into a technical collaboration agreement with a West German firm of repute in the line to implement their licensed capacity of 60 million pieces of dry cells. They propose to build a plant near Mysore for implementing the scheme.

India's dry and storage battery industry has achieved notable strides in production as well as exports in recent years. From 300 million numbers in 1965, the output of dry battery cells more than doubled to 620 million numbers in 1972. However, taking into consideration the rising domestic demand, the installed capacity in the line has been expanded and new letters of intent have been issued. Besides, existing units were allowed to extend their existing capacity.

The output of storage batteries too increased substantially from 0.75 million numbers in 1965 to 1.10 million numbers in 1972. The output range includes various types of storage batteries, motor cycle batteries and automotive batteries to heavy duty batteries. Alongside production, the demand for these batteries is also going up. The industry is capable of meeting the full requirements, at present, of the Defence, Railways and the Posts and Telegraphs Departments. The industry has also built up capacity to commence production of batteries for submarines. With a view to increase production, new letters of intent were issued as well as existing units were allowed to expand their production. In the field of import substitution too, the industry has made a good headway.

TELEPHONE EQUIPMENT POPULAR ABROAD

M/s. Indian Telephone Industries Limited (ITI), Doorawani Nagar, Bangalore, a premier organisation engaged in manufacture of telephones, telegraphic apparatus and ancillaries secured export orders at a value of Rs. 1.66 million during the first three quarters of 1973-74 (April-December 1973). The orders were secured mostly from Afro-Asian and West Asian countries as also from highly developed countries, such as, Australia and Soviet Union for various types of telephones, telephone exchange equipment and a broad range of telephone spares and other allied items.

As on 31st December 1973, ITI had on hand export orders to the tune of Rs. 17.50 million for execution during 1973-74 and 1974-75. These include the turnkey contract bagged by it from Jordan against global tender for the supply, installation and commissioning of a 1000 lines automatic telephone exchange at a value of Rs. 2 million. ITI were also selected by the Government of Jordan for expanding the trunk automatic exchange facilities in Amman, the capital city. They also received repeat orders worth Rs. 6.5 million from East Africa for supply and installation of 11 automatic exchange extensions. In the preceding year (1972-73), their exports were of the order of Rs. 4.10 million as compared to Rs. 3.20 million in 1971-72. ITI's export target for 1973-74 has been placed at Rs. 7.5 million.

ITI's value of production in the first three quarters of 1973-74 (April-December 1973) was of the order of nearly Rs. 206 million while in the entire preceding year it was as much as Rs. 341 million. Their total turnover so far exceeded Rs. 2,500 million. ITI have to their credit developing quite a few products to keep pace with the latest technological developments. These include multiplex equipment, microwave equipment for satellite earth stations (for long distance communications), specialised equipment for Railways and Defence and modern electronic exchanges.

Their total output during 1972-73 comprised of 0.25 million instruments of various types, 128,000 line strowger exchange equipment, 95,000 lines of cross-bar exchange equipment and transmission equipment. ITI's two more units set up at Naini near Allahabad (U.P.) and the other in Kashmir have recently gone on production stream. In addition to these, two more units are being set up at Rae Bareilly in U.P. and in Kerala State.

OFFICE MACHINES ACTIVE IN EXPORT TRADE

Office machines manufactured in India have promising export potential in overseas markets owing to their qualitative supremacy and price competitiveness. In fact, the exports of these items are steadily picking up in recent years. During 1972-73, office machines secured foreign exchange at a value of Rs. 22 million while in the preceding year, the value was of the order of Rs. 21.45 million.

Of the total export realisation during 1972-73, statistical machines alone secured as much as Rs. 17.15 million, accounting for the bulk of Indian supplies. However, as compared to their value in the preceding year (1971-72) at Rs. 18.73 million, the exports marginally declined during 1972-73. A variety of statistical machines, such as, punchers, verifiers, collators, sorters, reproducers and tabulators were the significant items exported. Australia, Japan, France and New Zealand were the leading customers for these machines during the year.

In the group of office machines, typewriters constituted another significant item which earned over Rs. 1.5 million (1972-73) as compared to Rs. 0.84 million in the preceding year. These were mainly bought by Nepal, Malaysia and Bangladesh.

In the same year, calculating machines (manually operated) were sold to Federal Republic of Germany and Hungary at a cost of Rs. 0.32 million.

Apart from the above items, duplicating machines and parts, parts of statistical machines, typewriter and cheque writing machines, stapling machines and other office machines were the other items active in exports during the year.

M/s. International Computers India Manufacture Limited (ICL), Magnet House, Dougall Road, Bombay-1 BR, one of the manufacturers and exporters of office machines and accessories in the line, improved their exports to Rs. 2.10 million during 1972-73 from Rs. 1.90 million in the preceding year.

The export range of the firm broadly includes office machines, spare parts and punched cards. Their manufactures are sought by a number of markets abroad which include developing and developed alike.

The firm's profile of manufactures covers all kinds of computers, tabulators, accounting and calculating machines and other machines and appliances. They undertake manufacture of these machines in technical collaboration with M/s. International Computers Limited, a well renowned firm in the United Kingdom. Their manufacturing plant is located near Poona in the Maharashtra State.

During 1972, India's data processing machinery industry produced items like key punches, reproducers and tabulators, verifiers, sorters, collators, interpreters and gang punches at a value of Rs. 31 million. Presently, there are two major units engaged in the manufacture of latest models of these items mainly with an objective to meet the growing overseas demand. Of these units, one has recently secured an industrial licence for the manufacture of the latest model of the data entry types which combines operation of the punch and a verifier.

In the field of typewriter manufacture currently there are four units in the organised sector with an installed capacity of 86,400 numbers. During 1972, their production was 41,971 numbers. Besides these units, one more unit is to take up manufacture of portable typewriters (installed capacity 15,000 numbers per annum). Additionally, five other parties were issued letters of intent for the manufacture of standard, portable and electric typewriters for a total capacity of 103,600 numbers. Inclusive of these schemes, the typewriter industry's projected capacity would be of the order of 205,000 numbers per annum. Apart from these, the industry has plans to commence manufacture of steel types typewriters and teleprinters.

EXPORT PERFORMANCE AND POTENTIAL

INDIA'S SHARE IN TRADE WITH FRANCE

The total volume of trade between India and France has increased by about 110 per cent in 1972-73 over 1970-71, the respective figures being Rs. 828 million and Rs. 393 million. During 1972-73, India had a favourable balance of trade with France to the tune of Rs, 90 million against an adverse balance of the order of Rs. 128 million in the preceding year. This was made possible by increase in the exports (about 90 per cent) and marginal decrease in imports.

Indian exports to France during 1972-73 were of the order of Rs. 459 million against Rs. 242.1 million in 1971-72. During the period, export of leather registered an increase from Rs. 69.6 million (1971-72) to Rs. 195 million (1972-73). Of this, goat leather and skins (unfinished) pushed up from Rs. 35.7 million to Rs. 74.8 million. Other major commodities which showed sizeable improvement in export to France were fish and fish preparations (Rs. 13.5 million in 1972-73 from Rs. 5.3 million in 1971-72); coir yarn (Rs. 14.2 million from Rs. 8.4 million); cotton manufactures (Rs. 21.8 million from Rs. 14.5 million) and other unclassified items (Rs. 98 million from Rs. 32 million). Tobacco (manufactured) fetched Rs. 1.4 million in 1972-73 as against Rs. 0.4 million in the previous year. Export of precious stones improved from Rs. 21.8 million in 1971-72 to Rs. 26.7 million in 1972-73. Spices, coffee, raw wool, natural gums and resins etc., and machinery and transport equipment, however, showed slight downward trend.

Imports from France were at a lower level, though marginal. As against Rs. 371 million in 1971-72, the imports during 1972-73 were of the order of Rs. 369 million. Machinery of various types continued to have the biggest inflow into India. Its imports increased from Rs. 143.3 million in 1971-72 to Rs. 164.2 million in 1972-73. Machinery other than electric, however, showed a downward trend from Rs. 118.1 million to Rs. 100.6 million. Metal working machinery imports rose from Rs. 3.1 million to Rs. 5.1 million and office machines from Rs. 2 million to Rs. 5.5 million. Power generating machinery declined from Rs. 5.4 million to Rs. 3.2 million. Railway vehicles imports also declined considerably from Rs. 18.3 million to Rs. 4.7 million.

On the non-machinery side imports of fertilisers (manufactured) rose from Rs. 26.6 million in 1971-72 to Rs. 31.7 million in 1972-73. Organic chemicals (Rs. 22.4 million in 1971-72 and Rs. 20 million in 1972-73); iron and steel (Rs. 66.3 million and Rs. 48.3 million); plates and sheets of iron and steel (Rs. 42 million and Rs. 34.2 million) and medical and pharmaceutical products (Rs. 5.4 million and Rs. 4 million) showed lower imports. Non-ferrous metals, manufactures of metals, aircrafts, scientific, medical, optical instruments etc., are some of the other items which registered higher imports.

India and France have been making efforts to develop trade and expand economic, technical and industrial cooperation between the two countries to their mutual advantage. Discussions between the two countries are held from time to time in furtherance of these objectives. The Indo-French Economic Commission which met last in April 1973, examined various fields where expansion of trade and economic cooperation would be desirable. As a result, quotas of various Indian products for import into France were increased. Important items among these were dried mushrooms, textiles of synthetic fibres, and ready made garments of non-cotton fibres. Areas for industrial and technological cooperation were also identified e.g., automobile accessories, printing machinery, industrial gas, certain chemicals, petro-chemicals, textile machinery and electronics.

INTERNATIONAL TRADE IN TEXTILES

On December 20, 1972, about 50 Governments participating in the GATT Negotiating Group on Textiles reached agreement after intensive negotiations on an arrangement regarding international trade in textiles. The new multilateral multifibre arrangement, which came into force on Ist January, 1974 replaces the long-term arrangement regarding international trade in cotton textiles (LTA) and covers textiles of cotton, wool, man-made fibres or blends thereof. It will run for a period of four years from Ist January, 1974.

The basic objectives of the new Arrangement are "to achieve the expansion of trade, the reduction of barriers to such trade and the progressive liberalization of world trade in textile products, while at the same time ensuring orderly and equitable development of this trade and avoidance of disruptive effects in individual markets and on individual lines of production in both importing and exporting countries." The new Arrangement is a marked improvement over its forerunner, the LTA. It takes due cognizane of the aspirations of the developing countries and one of its principal aims is "to further the economic and social development of developing countries and secure a substantial increase in their export earning from textile products and to provide scope for a greater share for them in world trade in these products".

The new Arrangement embodies provisions for the removal of all the existing quantitative restrictions, bilateral arrangements or any other restraints obtaining in the field of textiles within a period of three years if these are not justified under the provisions of the GATT or do not conform with its own provisions. Although the new Arrangement permits imposition of restrictions in the event of "market disruption" a stricter and more comprehensive definition of "market disruption" would render it more difficult to resort to such restrictions.

A significant feature of the new Arrangement is that, apart from the Textiles Committee, a Textiles Surveillance Body will also be established. This will be a standing body for the administration of the new Arrangement and empowered, when problems arise, to make recommendations to the Governments concerned.

An important element of interest to India under the Arrangement relates to provisions regarding handlooms. Handloom fabrics as well as handmade cottage industry products made of such handloom fabrics and traditional folklore handicraft textiles products are excluded from its purview under the new Arrangement. In other words quantitative restrictions on these items cannot be applied. The LTA had excluded only handloom fabrics from its purview.

BOOST IN LEATHER EXPORTS

India's exports of leathers and tanning materials aggregated to Rs. 1225.80 million in 1972-73 as against Rs. 657 million in the preceding year, 1971-72, recording an increase of over 86 per cent.

Almost all the varieties of leathers improved their offtake sizeably during 1972-73. In the group of East India tanned skins, goat skins constituted the major area of export expansion. The exports rose to Rs. 515.45 million in 1972-73 from Rs. 312 million in the previous year. In terms of quantity, 10,111 tonnes as compared to 9373 tonnes were supplied abroad in the respective years. Italy was the principal importing country having bought nearly 1887 tonnes at a value of Rs. 128.65 million as against 1449 tonnes at Rs. 72.83

million in 1971-72. Federal Republic of Germany, the next important buyer, improved its intake sharply from Rs. 42.10 million (1079 tonnes) to Rs. 105.45 million (1777 tonnes). France at Rs. 54.10 million (1127 tonnes), followed by Belgium at Rs. 31.53 million (617 tonnes), USSR at Rs. 50.55 million (1725 tonnes), USA at Rs. 25 million (655 tonnes), UK at Rs. 25.86 million (579 tonnes) and Japan at Rs. 27.54 million (522 tonnes) were significant among other buyers.

In the same group, sheep skins was another area of export dynamism during the year 1972-73. The export earning of the variety rose sharply to Rs. 274.30 million (4399 tonnes) from Rs. 184.42 million (4141 tonnes). The increase was recorded mainly because of larger offtake by Italy, France, U.K., Japan, Belgium and Federal Republic of Germany. In terms of value and quantum, their respective shares were at Rs. 67 million (846 tonnes), Rs. 40.45 million (756 tonnes), Rs. 39.78 million (604 tonnes), Rs. 38.45 million (688 tonnes), Rs. 19.60 million (288 tonnes) and Rs. 17.88 million (215 tonnes).

In the group of East India tanned hides and calf skins, all the four varieties of leather viz. cow hides, buffalo calf skins, cow calf skins and buffalo hides earned more foreign exchange as compared to their export values in the preceding year. For instance, cow hides exports increased to Rs. 124.75 million (10,715 tonnes) from Rs. 72.58 million (7045 tonnes), buffalo calf skins to Rs. 50.30 million (2478 tonnes) from Rs. 39.76 million (2762 tonnes), cow calf skins to Rs. 32.50 million (1540 tonnes) from Rs. 22.92 million (1376 tonnes) and buffalo hides to Rs. 7.20 million (710 tonnes) from Rs. 3.95 million (442 tonnes).

U. K., continued to be the biggest purchaser of cow hides during 1972-73 at Rs.110.72 million, followed by France and Italy at Rs. 5.61 million and Rs. 5.36 million respectively. Buffalo calf skins were imported by one and half a dozen countries among which UK (Rs. 31.12 million) and Italy (Rs. 13.66 million) were significant destinations. U.K. was again the foremost buyer of cow calf skins and bought the bulk of Indian supplies (Rs. 29 million). Buffalo hides were imported by over a dozen countries among which USA and UK are prominent.

Besides these principal varieties, goat hair and pickled goat skins were two other varieties of leather active in export trade during 1972-73. The export values were : goat hair Rs. 7.37 million (3388 tonnes) as against Rs. 6.58 million (2987 tonnes) in 1971-72 and pickled goat skins Rs. 5.15 million (272 tonnes) against Rs. 3.65 million (172 tonnes). The export value of two items viz. tanning materials and tanned reptile skins, however, declined to Rs. 2.17 million from Rs. 6.44 million and to Rs. 0.39 million against Rs. 0.79 million respectively.

In the industrial set up of India, the leather industry occupies a significant place by virtue of its wide distribution, sizeable employment and export potential.

EXPORT TRADE IN GEMS AND JEWELLERY

Gems and Jewellery articles made in India speak for the inherited skills and traditional craftsmanship of Indian artisan who, with the application of simplest tools, create exquisite works of art and earn substantial foreign exchange.

Against an export target of Rs. 1000 million fixed for the export of gems and jewellery items for the year 1973-74, India's export of gems and jewellery items are estimated to have earned foreign exchange at a value of Rs. 455.10 million during the first half of 1973-74 (April-September 1973) as against Rs. 324.74 million in the corresponding period of 1972-73 whereas India's total exports of gems and jewellery items during the year 1972-73 rested at a value of Rs. 788.2 million. This is indicative of steady export trend in India's gems and jewellery industry.

The substantial rise in this sector of industry was in the exports of diamonds which rose to Rs. 371.03 million during 1973-74 (April-September 1973) as compared to Rs. 265.52 in the corresponding period of 1972-73, recording an increase of about 40 per cent.

Precious and semi-precious stones fetched Rs. 70.33 million in the first half of 1973-74 as against Rs. 47.26 million in the corresponding period of 1972-73, registering an increase of 48 per cent. Imitation jewellery was another item which during this period rose to Rs. 8.05 million from Rs. 2.92 million in the corresponding period of the preceding year. Gold jewellery also witnessed growth from Rs. 2.59 million to Rs. 2.82 million.

The export earnings of pearls and synthetic stones, however, declined during the first half of 1973-74 as compared to that in the corresponding period of 1972-73. The export value of pearls came down to Rs. 2.73 million from Rs. 6.15 million while that of synthetic stones reduced to a level of Rs. 1,34,000 from Rs. 3,01,000.

The overall export performance of gems and jewellery items during 1972-73 touched a record figure of Rs. 788.2 million as against Rs. 522.9 million during 1971-72, recording an increase of over 50 per cent.

Major buyers of Indian gems and jewellery items with their intake in brackets during the year 1972-73 include U.S.A. (Rs. 164.8 million), Belgium (Rs. 156.3 million), Hong Kong (Rs. 127.7 million), Japan (Rs. 72.7 million), U.K., (Rs. 47.2 million), Netherlands (Rs. 43.2 million), Switzerland (Rs. 33.3 million), France (Rs. 26.7 million), Federal Republic of Germany (Rs. 22.7 million) Singapore (Rs. 17.3 million), Australia (Rs. 8.5 million), Canada (Rs. 1.4 million), Saudi Arabia (Rs. 1 million) and U.S.S.R. (Rs. 0.5 million).

EXPORT PERFORMANCE OF SILK GOODS

Exports of Indian silk goods during 1973 earned a sizeable amount of Rs. 114.8 million as against Rs. 76 million in 1972 which indicated an increase of 51 per cent. The quantum of exports in 1973 was of the order of 5.83 million sq. metres which shows an increase of 28 per cent over that of 1972.

Overall performance for the year 1973 recorded an improvement over the preceding year in the field of export of silk goods. The exports of tasar silk goods, in particular, touched an all-time record of Rs. 20 million. In relation to this, exports of Indian silk goods during the year 1973-74 (April-December 1973) have aggregated to Rs. 90 million as against Rs. 59 million in the corresponding period of last year. As such, the target of Rs. 120 million during this year (1973-74) is well within sight.

The share of mulberry silk products was as much as Rs. 94.70 million (4.94 million sq. metres) in the exports during the period reviewed in 1973 as compared to Rs. 62.45 million (3.9 million sq. metres) in the year 1972. As compared to this, the share of mulberry silk products during the year 1973-74 (April-December 1973) totalled to Rs. 75.76 million as against Rs. 49.37 million in the same period of 1972-73.

The share of tasar products was to the tune of Rs. 20 million (0.9 million sq. metres) in the exports during 1973 as against Rs. 13.59 million (0.68 million sq. metres) in the year 1972. In comparison to this, the export of tasar goods during the first nine months of 1973-74 (April-December 73) amounted to Rs. 14.70 million as against Rs. 9.39 million in the corresponding period of 1972-73 (April-December 72).

The mulberry silk goods are being exported to nearly 80 countries. Important among them were the West European Countries which accounted for about 56 per cent of the total exports. Americas, East European Countries, Oceania, Africa and Asia are the other important regions which offer potential markets. Among them, Federal Republic of Germany was the leading buyer which imported Rs. 18.9 million worth of mulberry silk goods during the year 1973 as compared to Rs. 14.48 million in the preceding year, recording an increase of 30 per cent. France ranked second with purchases at Rs. 10.9 million as against Rs. 6 8 million in 1972. The purchases of the following countries in the year 1973 as compared to 1972 (figures in brackets) are : Malaysia/Singapore Rs. 10.38 million (Rs. 6 million), U.S.A. Rs. 8.84 million (Rs. 4.64 million), U.K. Rs. 7.75 million (Rs. 3.45 million), Japan Rs. 7.18 million (Rs. 3.34 million), Italy Rs. 5.13 million (Rs. 1.75 million), Kenya Rs. 3.52 million (Rs. 3.1 million), Switzerland Rs. 2.41 million (Rs. 1 62 million), Sweden Rs. 2.28 million (Rs. 1.87 million), Australia Rs. 1.68 million (Rs. 1.14 million), Denmark Rs. 1.23 million (Rs. 0.7 million), Belgium Rs. 0.7 million (Rs. 0.5 million), Hong Kong Rs. 0.4 million (Rs. 0.6 million), Poland Rs. 0.4 million (Rs. 3.02 million).

The dress-material earned Rs. 36.7 million during 1973 as against Rs. 22.2 million in 1972. Scarves earned a sizeable amount of Rs. 22 million as against Rs. 18.6 million in 1972. Sarees fetched an amount of Rs. 19.7 million as against Rs. 11.8 million in 1972. Ready-made garments and ties also indicated substantial progress. The exports of ready-made garments and ties amounted to Rs. 11.7 million and Rs. 3 million during 1973 as compared to Rs. 7 million and Rs. 2.20 million in 1972 respectively.

Tasar silk goods exports during 1973 aggregated to Rs. 20 million as compared to Rs. 13.6 million in 1972, recording an increase of 48 per cent. Federal Republic of Germany at Rs. 10.84 million accounted for more than half of total exports of tasar, recording an increase of 57 per cent in their purchases over the last year. Other leading countries whose purchases were substantial during the year 1973 were U.S.A., France, Italy, Switzerland and Japan. However, intake of France fell by 33 per cent as compared to 1972.

The year 1973 has been quite a successful one so far as the export of silk goods was concerned. Had it not been for the unhelpful price trends for raw materials which go into production of exportable fabrics, the performance could have been much better.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

NATIONAL PROJECTS CONSTRUCTION CORPORATION MARCHES AHEAD

National Projects Construction Corporation Limited, a premier construction organisation in the Public Sector is capable of executing works at competitive cost combining efficiency with modern mechanised and scientific methods of construction. It has during a span of 16 years achieved distinction of completing works costing over Rs. 800 million on major projects, such as, Earthen Dams, Concrete Dams, Masonry Dams, Barrages, Earthworks, Airfields, Prestressed Concrete Bridges, Tunnels, Civil Works of Powerhouses, Fabrication and Erection Refineries, Cement Factories, Aqueducts, Canal Structures, etc. for the various States and also in Nepal.

It has in hand major works costing over Rs. 314.8 million. Some of these are Gumti Hydro Electric Project in Tripura, Loktak Power Channel and Ithai Barrage in Manipura, Tuli Pulp & Paper Project in Nagaland, Upstream Navigation Lock at Farakka and Kalindri Regulator in West Bengal, Subernrekha Hydel Project in Bihar, Building Works of M.E.S. in U.P., Bairasual Hydro Electric Project in Himachal Pradesh, Diversion Tunnel for Salal Hydel Project in J & K, Carpets and Farms work in Rajasthan, Bailadilla Tunnel in Madhya Pradesh, Masonry Weir across River Pench in Maharashtra and Hidkal Dam in Karnataka.

It owns modern earthmoving and other latest construction equipment costing about Rs. 40 million. It has in its employment hundred of specialised and experienced engineers in addition to over 2000 technicians proficient in various trades assisted by thousands of labourers.

INVENTIONS AND IMPORT SUBSTITUTION

National Research Development Corporation of India, New Delhi recently announced Republic Day (1974) Awards for meritotious inventions and import substitutes. Seven inventors were awarded cash awards for development of 5 inventions. Two inventors were sanctioned financial assistance for development of two inventions. 21 individnals and 4 organisations were awarded two silver shields, five bronze shields, seven certificates of merit and cash awards for substitution of 15 imported items.

The highlights of the inventions are i) development of a process for preparing a strong flocculant from fenugreek for coagulating suspended and colloidal turbid matter in water, sewage, fruit juices etc. and

ii) substitution of imported universal fluted roller needle bearings for ring spinning frames in textile industry.

So far, 399 inventors have been given cash awards and financial assistance for development of 358 inventions. Similarly 232 items of import substitutes have been given cash awards, 5 gold shields, 34 silver shields and 33 bronze shields.

PLANS FOR PRODUCTION OF PRINTING MACHINERY

According to an assessment by a Working Group Panel, it is estimated that the demand for various types of printing machines would be of the order of Rs. 120 million in 1973-74. The production in 1971 was valued at Rs. 3.7 million and Rs. 9 million in 1972. In 1972, a unit in public sector, M/s. Hindustan Machine Tools Ltd. went into production of printing machinery including automatic printing machines, paper cutting machines etc. Another unit in private sector has commenced production of web fed rotary offset printing machines. In 1973-74, the installed capacity is estimated at Rs. 35 million and production Rs. 30 million.

In 1971, the following 6 units were producing printing machinery with an installed capacity of Rs. 9.6 million:

1. M/s. Printers House (P) Ltd., 10 Scindia House, New Delhi.
2. M/s. Printers Engg. Co., Metro Estate, Central Station Road, Kalina, Santa Cruz, Bombay.
3. M/s. Gujarat Machinery Manufacturing Ltd., Station Road, Karamsad, Distt. Kaira, Gujarat.
4. M/s. India Machinery Co. Ltd., Makada Road, Das Nagar, Howrah.
5. M/s. Maya Engineering Works Ltd., Russa Road, South Tollygung, Calcutta.
6. M/s. Britannia Engineering Co. Ltd., Titagarh, 24-Parganas (West Bengal).

The number of units rose to 8 in 1972 but the capacity remained unchanged. The additions were M/s. Hindustan Machine Tools and M/s. Handa Rotary Machines Limited, Bombay.

The indigenous production is limited both in terms of range and type; most of the requirements for printing machinery are made through imports. The types of machines imported during the year 1970-71 were :

Type	Nos.	Approximate value (Rs. million)
1. Platen presses	1200	1.4
2. Stop cylinder letter presses	500	30.0
3. Two revolution letter presses	200	15.0
4. Rotary letter press printing machines	10	6.0
5. Offset (sheet fed and web fed) machines	250	25.0
6. Proofing presses	1000	2.5
		79.9 – say Rs. 80 million

Besides, various parts and allied equipment is also required to be imported.

As there is a wide gap between the demand and the capacity, there is still scope for further expansion in this field. A number of schemes for the manufacture of various types of printing machinery, such as, cylinder printing machines, offset printing machines and so on, have been approved. Foreign technical collaboration in this field is allowed.

In spite of domestic difficulties, the industry has been in a position to export machinery of the order of about Rs. 0.3 million annually.

COLLABORATION AGREEMENT FOR SHOVELS

Larsen & Toubro, an Indian company in Bombay, has signed an agreement with a French firm Poclain. This important industrial group manufactures various types of heavy equipment and distributes Poclain goods in India. The agreement, valid for an initial period of 5 years, covers the manufacture of two types of hydraulic shovels of average capacity. A factory of 14,000 square metres will be constructed in Bangalore. The part of components manufactured locally will be progressively increased to reach 85 per cent in 1978.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

POWERED CYCLE RICKSHAW

The Central Mechanical Engineering Research Institute, Durgapur, has designed a powered cycle rickshaw. The power pack developed at CMERI can be attached to any cycle rickshaw and the complete powered cycle rickshaw costs less than Rs. 1800 with an annual maintenance cost of only Rs. 150. This powered cycle rickshaw can easily carry a load of 150 kilograms on slopes and gradients normally encountered in a city and has a maximum speed of 30 kilometre per hour. The charges for powered cycle rickshaw for comparative distances would be only slightly more than that of cycle rickshaw and nearly half that of the auto—rickshaw.

With the steep increase in petrol prices when taxis and auto-rickshaws have become out of the reach of the middle class people, the powered cycle rickshaw not only provides a cheap form of transport but at the same time relieves the suffering of the toiling cycle rickshaw driver.

FIBREGLASS REINFORCED PLASTICS

Fibreglass reinforced plastics technology and fibre wound reinforced plastics technology developed by National Aeronautical Laboratory (NAL), Bangalore offer a variety of products which combine light weight and high strength, resistance to corrosion and high insulating properties to meet specialised needs of aerospace, transport, chemical, electrical, electronics, marine and agricultural fields. The Laboratory has carried out pioneering work in this field, on scientific lines, using filament winding machines, fabricated also at the Laboratory, pressure matched dies, etc. backed by rigorous quality testing and control. FRP technology is labour intensive and it can substitute metals including steel which are in short supply. Already goods worth Rs. 1.5 to Rs. 2.0 million have been made and supplied by the Laboratory for user organisations.

Chromium because of its high strength, heat resistant and non-corrosive properties, forms an important constitutent for high temperature alloys such as those used in turbine blades etc. The annual demand for chromium used by the ferrous casting industry alone is estimated at 35 tonnes of supper purity chromium or of the order of Rs. 30 million per year. India is the third largest producer. It is possible to use larger quantities of chromium in place of nickel in partial substitution of nickel subject to certain limitations such as nitrogen embrittlement.

Titanium is the fourth most abundant metallic element, in the earth's crust and has strength properties superior to steel. Because of its unique mechanical electrical and thermal properties, it found ready use in jet engines, compressor parts and airframes.

A novel set up, viz. an electron beam splatting furnace, has been designed and set up in NAL, where sponge titanium is melted under an electron beam and the molten drops are splatted into fine flankes. The equipment, the first of its kind to be made in the country, has a capacity of 5 kg. per day and temperatures upto 3000°C can be attained.

NEW TECHNOLOGY FOR PRODUCTION OF PERCHLORATES

Central Electrochemical Research Institute has developed a technology for the production of perchlorates employing lead dioxide electrodes. A commercial prototype cell (5000 A) has been designed and operated successfully.

Potassium perchlorate is used as oxidizer in fuels for military rockets, in explosives, in fireworks and flares and ammonium perchlorate is used as an oxidizer in rocket propellants and for heavy smoking jet assisted take off (JATO) units. The present demand for perchlorates is estimated at 800 tonnes per annum and is likely to increase in the coming years.

The process know-how for production of sodium perchlorate has been released to Indian Detonators Ltd., Hyderabad and ammonium perchlorate to Vikram Sarabhai Space Centre, Trivandrum. Both are taking steps to put up commercial plants each with a capacity of 150 tonnes per annum. Indigenous production is likely to save a sum of Rs. 2.1 million as foreign exchange.

CECRI has made a significant contribution by developing TSIA (titanium substrate insoluble anode) similar to DSA. These electrodes replace with advantage the conventional electrodes like graphite, platinum in electro inorganic preparations.

CECRI came out for the first time with the finding (in 1964) that manganese dioxided obtained by the electrolysis of manganese chloride solutions is more fibrous and more active compared to the product obtained by the electrolysis of sulphate solutions. Studies have been conducted by CECRI on a pilot plant scale with a capacity of 50 kg. per day. Based on the CECRI know-how, a commercial plant will be coming up shortly in Mysore State with an ultimate capacity of 15 tonnes per day.

PROCESS FOR WET-HEAT RESISTANT LEATHER

The Central Leather Research Institute (CLRI), Madras has recently developed a process for the production of wet-heat resistant leathers which are entirely new products unknown to leather industry. These are useful for suedes (plain or printed) and industrial leathers. Such leathers have better sweat resistance besides being non-shrinkable at the boiling point of water. They can stand the wet-heat in boiling water continously for a minimum period of two hours.

The process developed by CLRI envisages applying the cross-linking agent at the appropriate stage of chrome tanning without, in any way, affecting the processing method of the leather. The cross-linking agent can be prepared easily with readily available chemicals.

Several batches of skins (50 skins per batch) have been treated with the product and the results are satisfactory.

The tanned leathers receiving the treatment for heat resistance can be fat liquored by any fat liquor normally being used, and can be further processed for dyeing and finishing in the normal way or at the elevated temperature for obtaining the desired feel and softness. No adverse effects on flesh or grain surfaces arise due to this treatment. The area loss due to this treatment does not exceed to about 4 to 5 per cent. The process can be adopted for making semi-chrome diaphragm leather and a variety of softy leathers.

Any chrome tanning factory can make and use the cross-linking agent with a small capital investment, required for a S.S. jacketed mixing vessel with ancillaries. No imported components are involved. All the main raw materials required in the process are indigenously available.

Application trials can be demonstrated by CLRI to the prospective parties but the details of manufacture of the cross-linking agent will be given only after the agreement is executed with the National Research Development Corporation of India, 61, Ring Road, Lajpat Nagar III, New Delhi-110024.

INDIA'S TRACTOR INDUSTRY

India has been traditionally an agricultural country and its agricltural operations had largely been dependent on manually operated and animal drawn agricultural implements. Even today such implements are being used extensively and are being gradually replaced through mechanisation. As is well known, the climatic and soil conditions vary considerably and necessitate the use of a wide variety of hand tools and implements required for agricultural operations. In view of the dependence on agriculture and on draft-animal power, a large variety of implements suitable for such operational needs have been developed and are constantly being improved upon through research and development. In so far as these hand tools and implements are concerned, India is fully equipped to meet her internal needs and the experience gained in this field could be advantageously utilised by other developing countries, if necessary.

With the rapid growth of population in India, the production of more food grains has assumed very great importance in recent years. It is in this context that India has launched a big programme of mechanisation of agriculture. Initially, the basic needs by way of equipment for mechanization had to be imported. Due to concerted efforts made during the last two decades, a large number of industries have been set up all over the country which are basic to agriculture.

Tractor Industry came into being in India during the Second Five-Year Plan period as a result of increased emphasis placed on the need for mechanising agriculture, partially based on the facts stated earlier. The production of agricultural tractors in the country commenced in the year 1960-61. At that time the number of units were 4 with a total capacity of 10,000 nos. per annum covering the range of 21 H. P. to 50 H. P. Between 1964-65, the industry was reviewed with a view to bringing in additional capacity to meet the anticipated requirement during the Fourth-Plan period, say 4 years. On this basis, a capacity of 26,500 nos. of tractors per annum was licensed among 5 units of which one unit was licensed during the year 1965 for a capacity of 7000 nos. thus say the total approved capacity to 36,500. While the licensing capacity was increased, the range of H.P. of the tractor was confined to 21 to 50 H.P.

During the year 1968-69, the industry was again reviewed as the situation in the agriculturals ector had undertaken a phenomenal change due to the various measures adopted by the Governments both at the Centre and in the States and also due to the farmers having begun to accept modern techniques and equipment in farming. As a result of these measures, the demand for tractors was found to have risen very steeply particularly due to better availability of credits for the purchase of tractors.

In order to bridge the gap between the demand and the indigenous production, existing licensed units have been encouraged to expand their production and more units were given the opportunity to produce tractors. Implementation of all these would take some time. It is, however, planned to produce about 40,000 nos. of tractors during the financial year 1973-74.

To meet the indigenous demand, though efforts are being made to increase the production indigenously, whenever there was gap between demand and supply it has been met by way of imports also.

In the past while working out the demand for Five Year Plans various estimates had been worked out by various groups. Ultimately, this task was assigned to National Council of Applied Economic Research to conduct a scientific study and find out estimated demand of tractor for next 5 to 8 years starting from 1973-74. NCAER survey concerned itself with the economics of mechanization in general but also in particular with the economics of tractorization. Mechanization is a very inclusive word, ranging from the utilization of a sophisticated implement to mechanization differs from farm to farm in such a way that it is not easy to generalise. Consequently, the Council concerned itself with a study of two types of farms namely tractorised farms and non-tractorised farms. Based on this study the annual demand for 1973-74 is estimated to be 38 to 40 thousand rising up to a level of about 79 thousand nos. by 1978-79.

Government had set-up a Task Force Working Group on Farm Machinery to go into the demand and supply aspect for farm machinery as a whole. So far tractors are concerned, this group has estimated the annual demand pattern as under :-

1973-74	40,000 nos.
1974-75	46,000
1975-76	53,000
1976-77	61,000
1977-78	70,000
1978-79	80,000

Today in India tractor population is around 0.25 million numbers. There is a big scope for mechanising the farms.

Following chart will indicate the makes/models of tractors that are being manufactured or are being planned for manufacture in the country with or without foreign collaboration.

Sl. No.	Name of Indian Firm	Make/Model	H.P.	Annual Licensed Capacity in Nos.	Name of Collaborator
1.	Hindustan Tractors Ltd., Baroda	Zetor-3011 Super-50	35 50	7000	M/s. Motokov of Czeck Praha, Czechosolvakia
2.	Eicher Tractors (India) Ltd., Faridabad	20-30 DB.HP.		2000	M/s. Eicher of West Germany
3.	Tractors & Farm Equipment Ltd., Madras	MF-1035 IMT-555/558	35	7000	M/s. Massey Ferguson of U.K.
4.	International Tractor Co. of India Ltd., Bombay	B-275 434	35 HP 44 HP	10,000	M/s. International Harvestor Co. of U.K.
5.	Escorts Ltd., Faridabad	27W	25-35	16,000	M/s. Motoimport of Poland
6.	Escorts Tractors Ltd., Faridabad	Ford-3000	46	6,000	M/s. Ford Motor Co. of U.S.A
7.	Hindustan Machine Tools Ltd., Pinjore	Zetor-2011/2511	25	12,000	M/s. Motokov of Czeck
8.	United Auto Tractors Ltd., Hyderabad	U-445 U-650M U-651M	45 65	5,000	M/s. Industrial Export of Rumania
9.	Perfece Tractors Ltd., Patiala	Hanomag	37	5,000	M/s. Rheinstall Hanomag of West Germany
10.	Kirloskar Tractors Ltd.. Nasik	D-3006 D-4006 D-6006 D-10006	25 to 75	10,000	M/s. Klockner Humbottat Deutz of West Germany
11.	Harsha Tractors Ltd., Ghaziabad	T-25	25	10,000	M/s. Prommesh Export of U.S.S.R.
12.	Premier Irrigation Eqp Ltd., Calcutta	David Brown 900	35	5,000	M/s. David Brown of U.K.
13.	Steyr India Ltd., New Delhi	Steyr Model-540	44	12,000	M/s. Steyr Daimler of Austria
14.	Auto Tractors Ltd., Lucknow	Leyland-154	25	12,000	M/s. British Leyland of U.K.
15.	Byford Tractors Ltd., New Delhi	Shibaura (S-2000)	37	6,000	M/s. Ishikawajima Harima H.I. of Japan
16.	Punjab Tractors Ltd., Chandigarh	Indigenous Swaraj	25	12,000	Indigenous
17.	Raja Bahadur Motilal Poona Mills Ltd., Poona		37	10,000	Indigenous

Note : Only firms from S. Nos. 1 to 7 are in production.

It may be observed from the above that India is manufacturing various ranges of tractors with the technology obtained from well known collaborators all over the world. Therefore, it is most suited to meet the different requirements of different countries in various H.P. ranges. All the tractor manufacturers in India are having free rights to export their products. Exports have already commenced in some neighbouring countries including those of Middle East.

TOURIST PROMOTION THROUGH HOTEL DEVELOPMENT

Tourism is an invisible item of export and many developing countries are encouraging the industry with a view to have more earnings for balancing their economies. In India, it is proposed to take up the construction of new hotels as they constitute the most important segment of the tourist industry. Renovation and expansion of existing hotels and construction of hotels and expansion of traveller lodges, etc. is also contemplated. In the State sector, the emphasis will be on development of places of local or regional importance. In the Fifth Five-Year Plan, for the India Tourism Development Corporation, a provision of Rs. 340 million has been made. Of this, a sum of Rs. 310 million is on account of schemes relating to the provision of additioal accommodation.

There are nearly 174 hotels approved by the Department of Tourism. Of these, 149 hotels have been inspected for classification and the remaining 25 are under the process of classification. To encourage the hotel industry several incentives are being offered to attract capital so that there may take place a rapid development in this field. The major incentives accorded to the hotel industry are as follows :

New hotels are exempt from income-tax on their income up to 6 per cent of the capital employed in the hotel. The exemption is available for the accounting year in which the hotel starts functioning and for the four succeeding years.

If the profits during the tax holiday period of five years are insufficient to avail of the tax concession, in relation to the amount exempted i. e. 6 per cent of the capital employed the deficiency is allowed to be carried forward up to eight years from the year of commencement of business.

A new hotel must satisfy the following conditions, the order to be entitled to tax holiday benefits.

(a) The business of the hotel is not formed by the splitting up or the reconstruction of a business already in existence or by the transfer to a new business of a building previously used as a hotel or of any machinery or plant previously used for any purpose.

(b) The business of the hotel is owned and carried on by a company registered in India with a paid-up capital of not less than five hundred thousand rupees.

(c) The hotel has :-

    (i) not less than fifty guest rooms with attached bathrooms, equipped with modern sanitary fittings, if it is situated in a town with a population of 0.5 million or more, or

    (ii) not less than twentyfive guest rooms with attached bathrooms, equipped with modern sanitary fittings, if it is situated in a town with a population of less than 0.5 million.

(d) The hotel is for the time being approved for the purpose of this sub-section by the Central Government.

It is not necessary that the hotel is run in a premises owned by the company.

Dividends declared out of "tax holiday profits" are exempt from tax, in the hands of the share-holders.

In the case of hotels where the machinery or plant is installed before Ist June, 1974 by an assessee being an Indian company in premises used by it as a hotel approved by the Central Government, a development rebate equal to 25 per cent of the cost of machinery or plant is allowed in the year of installation subject to specified conditions.

The development rebate is in addition to the depreciation on the assets.

In the case of new building where it is owned by an Indian company and used by such a company as a hotel and such hotel is for the time being approved by the Central Government, initial depreciation at the rate of 25 per cent of the actual costs of erection of the building is allowed in the first year in addition to normal depreciation for the year.

At present, financial assistance to the hotel industry is available from the State Finance Corporations, or the Industrial Finance Corporation which give loans to the industry generally to the extent of 50 per cent of the capital cost of the project. Financial assistance in the shape of interest bearing loans will also be available from the Hotel Development Fund set up by the Government, to approved hotel projects undertaken by public or private limited companies, cooperative societies and trusts located in areas of tourist importance. The quantum of loans will be upto 75 per cent of the value of the fixed assets i.e., land, building and other immovable assets in the case of new constructions, repayable in 15 years. In the case of approved hotel projects undertaking expansion, renovation, the quantum of loan will be upto 50 per cent of the cost to be incurred, repayable in 10 years. The effective rate of interest payable on these loans will be the same as that charged by the Government to industrial undertakings i.e., 7.5 per cent per annum.

The Government of India permits foreign investment and collaboration in hotel projects which, when completed, will offer facilities appropriate to their placement as first-class hotels either in 4 Star or 5 Star categories, according to the criteria prescribed by the Department of Tourism. The terms on which such collaboration is allowed are broadly indicated below:

Where a foreign collaborator wishes to invest in the equity capital, Government normally permits such investment upto 20 per cent of the total equity capital of the company.

There is no restriction in regard to the remittance of dividends and profits accruing from such foreign investment or in regard to repatriation of capital.

Employment of foreign personnel and experts for the start-up and operation of the hotel projects would be considered.

In the event of technical services being available for operation of the hotel, for promotion and booking of hotel rooms and reservation facilities, reasonable remuneration may be paid to the foreign collaborator in relation to the expected earnings.

In financing the project, the ratio of equity to debt should not exceed 1:2.

The management/operation of the hotel would vest in Indian hands.

The foreign collaboration on a membership basis i.e., on a licence or franchise arrangement whereby the hotel will receive the advantages and the facilities for sales, reservation etc. of the foreign chain, can be considered on merits.

Hotel industry holds a good future both to Indian and overseas entrepreneurs from the point of view of investment and collaboration. ☐

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INDIAN EXPLOSIVES TO WEST ASIAN MARKETS

Included in the priority sector of industries, India's explosive and pyrotechnic industry has been well established in India. The industry achieved impressive growth over the years to the extent of satisfying considerable overseas demand for different categories of explosives. For instance, during 1972-73 the industry earned foreign exchange at a value of Rs. 3.75 million as compared to Rs. 2.22 million in 1971-72 and Rs. 1.20 million in 1970-71.

During 1972-73, the exports of fuses, primers and detonators brought in Rs. 2.38 million while in the preceding year (1971-72) the export value was of the order of Rs. 1.68 million. Propellent powders and other prepared explosives together earned over Rs. 1.30 million as compared to their value in 1971-72 at Rs. 0.4 million. In 1972-73, Iran, Singapore, Iraq, Jordan and Bangladesh were the principal importing markets for fuses, primers and detonators while for propellent powders and other prepared explosives, Iraq, Bahrein Islands, Kuwait and Nepal were leading export destinations.

Pyrotechnical articles, such as, sparklers were imported mainly by Yemen Arab Republic and Fiji Islands during the year.

Adding to the export endeavour of the explosives sector of the Indian economy, M/s. Indian Explosives Limited, I.C.I. House, 34, Chowringhee, Calcutta-16, secured export orders to the tune of Rs. 3.70 million during the year ended September, 1973. The firm's export range during the year included mainly blasting explosives, safety fuses, detonating fuses and other allied products. In fact, the firm was able to increase its exports to the level indicated above from Rs. 2.10 million in 1971-72, registering more than 75 per cent increase.

The West Asian markets are the principal export destinations of this firm. It has made a good headway in developing a range of new products in both, explosives and accessories to satisfy the exacting needs of the buyers abroad.

During the year under review, the firm has to its credit development of a number of blasting explosives which were designed and marketed for surface and underwater blasting and trenching. In addition to these, it was also able to market a superior quality safety fuse in the same year. The firm's capacity for manufacture of commercial blasting explosives is of the order of 28,000 tonnes per annum. Its production of all types of detonators was in the neighbourhood of its installed capacity during the year. In 1971-72, its production of blasting furnaces was estimated at 31,327 tonnes, safety, military and detonating fuses at 79 million metres and military powder at 43 million units. The company's plant for manufacture of explosives is in Bihar while its another plant for manufacture of urea and other intermediate products is in Kanpur in Uttar Pradesh. It has also a plant for the manufacture of nitrocellulose, the capacity of which is of the order of 1,000 tonnes per annum. It is expected to go on production stream by mid 1974 and its full output is expected to save foreign exchange to the tune of about Rs. 7.5 million per year.

India's explosives industry's output during 1972 went up moderately as compared to that in the preceding year. For instance, in the organised sector the installed capacity of 47,000 tonnes of blasting explosives was spread over among two units in the line and their production during the year was 32,666 tonnes valued at Rs. 128.70 million as compared to 32,319 tonnes valued at Rs. 125.10 million in 1971. In the same year, there were two units engaged in production of detonators with an installed capacity of 168 million numbers. Their production was 116 million numbers valued at Rs. 48.40 million as compared to 107 million numbers valued at Rs. 49.20 million in 1971. The figures of installed capacity in respect of safety fuses and detonating fuses during 1972 respectively were 14.10 million coils and 9 million metres and their production during the year was 8.83 million coils (Rs. 18.30 million) and 6.2 million metres as compared to 8.10 million coils and 5.4 million metres in 1971.

KNITTING MACHINES POPULAR IN EAST EUROPE

M/s. Simac Group (India) Private Limited, 5/7, Sidhpura Industrial Estate, Swami Vivekanand Road, Goregaon (W), Bombay-62, one of the leading manufacturers and exporters of hand knitting machines and parts secured export orders at a value of nearly Rs. 8.15 million during 1972-73. Most of these orders came from the East European countries. For instance,

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Czechoslovakia placed sizeable orders to the tune of nearly Rs. 6 million, accounting for the maximum contribution to the total value. German Democratic Republic constituted the next best market which placed orders at a value of Rs. 1.50 million, followed by Poland, Yugoslavia and Netherlands.

In a broad range of textile and leather machinery that is supplied abroad from India, knitting machinery occupies a significant place. In fact, a number of markets abroad which include even the developed ones, such as, Czechoslovakia, Democratic Republic of Germany and Poland import Indian knitting machinery every year. During 1972-73, nearly 18 countries bought the machinery among which East European markets were the leading buyers while in the preceding year German Democratic Republic, Hong Kong, Lebanon, Iraq and Ghana were the significant markets.

Besides knitting machinery, a wide range of other textile machinery, such as, sewing machines and parts cotton cording machinery, cotton spinning ring frames, extruding machines for man-made fibre, cotton weaving machinery, cotton hosiery machinery, healds and reeds of cotton machinery, cotton spinning machinery and parts, parts and accessories of cotton weaving machinery, pirns, shuttles, cotton textile finishing machinery, washing, clearing and drying machines and parts and accessories of silk and man-made fibre spinning and weaving machinery are also exported from India.

LARGE OVERSEAS DEMAND FOR CONTROL CABLES

Against the stiff international competition, a sizeable order for control cables has been secured from Greece by M/s. Remsons Cables Private Limited, 59-BC, Government Industrial Estate, Kandivli West, Bombay. Viewed against the background that the contract was won against keen competition from the advanced countries, such as, Japan and Italy, the firm's export success deserves special mention. Despite the fact that the Indian firm is a small scale unit, its competitive ability in the field is indeed commendable.

The firm has already exported control cables to a well diversified range of markets abroad which include even the sophisticated markets like the United States and Canada and developing countries, such as, Kenya, Uganda and Libya.

Entering into production stream in mid-Sixties, the firm is manufacturing high quality control cables without any foreign collaboration with completely indigenous raw materials and entirely indigenous plant and equipment. The firm has been able to develop its know-how to manufacture control cables which were being imported in the country till recently resulting in a sizeable outgo of foreign exchange every year. It is to the credit of the firm to meet the bulk of home demand (about 80 per cent) of control cables and thereby making outstanding achievement in the field of import substitution as well as earning foreign exchange through overseas supply. It hopes to earn sizeable foreign exchange in the coming years by stepping up the exports.

India's wires and cables industry occupies a significant place in the engineering sector of Indian economy. As against Rs. 112.50 million in 1971-72, the industry's foreign exchange earning rose to Rs. 126 million in 1972-73. The export range includes insulated cables and wires, bare aluminium conductors, bare copper conductors, power cables and conductors and other types.

U.S.S.R., Iran, Sri Lanka, Federal Republic of Germany, Qatar, Arab Republic of Egypt, Sudan, Tanzania, Kuwait, Thailand, Singapore and Hong Kong are the leading markets.

During 1972, the production of ACSR/ACC conductors in the organised sector was of the order of 81,557 tonnes valued at Rs. 557 million while that of paper insulated power cables was estimated at 2,666 tonnes at a cost of Rs. 157.50 million. The installed capacity during the year in the case of former category was 103,950 tonnes (40 units) while in respect of the latter, it was 8,640 tonnes (7 units).

Apart from these main varieties, underground telephone cables, PVC power cables, PVC/VIR cables and bare copper conductors are among other types of cables and wires manufactured by the units in the organised sector.

INDIAN GLASS LAMPS TO NEW ZEALAND

A net importer of even simple electric items in the pre-independence period India has gradually emerged as a competent supplier of a large number of electric products to a number of markets abroad, particularly in the preceding two decades. For instance, varieties of lamps which were being imported into the country in large quantities have now come to be manufactured indigenously to the extent of releasing sizeable surplus for exports.

The demand for India-manufactured lamps is picking up rapidly in recent years. The export range in the line covers a number of varieties catering to the requirements of various sectors of economy. The overseas demand for automobile bulbs, photographic bulbs, electrically ignited bulbs, horticultural bulbs, infra-red bulbs, miniature bulbs, electric bulbs, torch bulbs (flash light) and ultra-violet bulbs is growing in quantum and value from year to year. These are imported by a number of countries abroad among which Nepal, Afghanistan, United Kingdom, Sudan, Kenya, Iraq, Bahrein Islands, Turkey, Spain, Lebanon and Dubai are significant.

M/s. Mazda Lamps, Calcutta, one of the undertakings engaged in the manufacture of a variety of electric lamps, recently received a sizeable export order from New Zealand for the supply of 150 and 200 watt glass lamps (bulbs). This is the first of a series of export orders expected to be received both from Eastern and Western countries.

The firm was able to make major breakthrough in highly competitive market like New Zealand because of international quality standards and price competitiveness of its products. It is also endeavouring to introduce some more hard-selling type items like high pressure mercury vapour lamps into export markets.

CHEWING GUM AND BUBBLE GUM IN EXPORT FIELD

Chewing gum and bubble gum are new comers in the export field. The firm which has broken new ground with the export of these non-traditional products is M/s. National Products 135, Kayal Byrasandra, Bangalore-560006. This firm which manufactures chewing gum and bubble gum, has signed a contract for the export of 50 tonnes of chewing gum and bubble gum base to Bulgaria. This is reported to be the first Indian export of this non-traditional item in which the firm claims to have achieved hundred per cent import substitution. It is further reported that this firm has on hand several enquiries for chewing gum and bubble gum and they hope to export these items for cosiderable value in the near future.

STEEL PIPES AND TUBES IN EXPORT TRADE

India's exports of steel tubes, pipes and fittings was up at Rs. 111.80 million in 1972-73 as compared to Rs. 108 million in the preceding year. Of the total export value, galvanised tubes and pipes of iron and steel alone contributed Rs. 56.66 million. The other principal varieties supplied abroad were non galvanised tubes and pipes of iron and steel (Rs. 14.27 million) and pipes and fittings of galvanised variety (Rs. 12.35 million). U.S.S.R., U.S.A., Saudi Arabia, Australia, Jordan, Bangladesh, Sudan and Kuwait were the leading customers.

Adding to the export effort in the line, M/s. Jain Tubes Company of Delhi have been able to improve their export of iron/steel pipes to 3,845 tonnes during the year ending July 1973, as compared to 2,269 tonnes during the preceding year. For the year ending July 1974, the firm has fixed the export target at 8000 tonnes valued at over Rs. 20 million. The Delhi firm is engaged in manufacture of G.I. pipes and other varieties of tubes through electric resistance welding process. They also produce steel tubes, conduit tubes and other allied items through welding, galvanising or fabrication of ferrous and non-ferrous metals.

EXPORT PERFORMANCE AND POTENTIAL

MORE EXPORTS TO U.S.S.R. ENVISAGED IN 1974

Indio-U.S.S.R. Trade Protocol for 1974, concluded recently, envisages a trade turnover of approximately Rs. 6700 million both ways in 1974.

The highlight of the Trade Plan for 1974 is that U.S.S.R. will supply substantial quantities of kerosene, fertilisers, industrial raw materials and components and spare parts for Soviet assisted projects in India. These quantities will be much larger than that were supplied in 1973.

In addition, the U.S.S.R. will supply newsprint, asbestos, pelladium, rolled steel products, zinc, nickel, copper, sulphur etc. U.S.S.R., will also export to India some quantity of sunflower seed oil. Also figuring prominently in the list of Soviet exports are capital goods and machinery of various types.

In return, India will export several non-traditional items, such as, engineering goods, cotton textiles, ready made garments, garage equipment, storage batteries, detergents, hand tools, footwears, cigarettes, power cables, surgical instruments, woollen knitwear, alumina etc. in addition to traditional commodities like de-oiled cakes, cashew kernels, tea, coffee, spices, tobacco, jute manufactures, handicrafts etc.

India's exports to U.S.S.R. during 1972-73 were to the tune of Rs. 3048 million against Rs. 2087 million in 1971-72 while imports were Rs. 1057 million and Rs. 873 million respectively. Major items of exports to the U.S.S.R., during 1972-73 were tea, cashew kernels, tobacco, castor oil, leather, cotton fabrics, jute manufactures, clothing, iron and steel.

EXPORT POSITION OF UNMANUFACTURED TOBACCO

The export of unmanufactured tobacco improved to Rs. 610.07 million in 1972-73 as against Rs. 422.5 million in the preceding year. The first three quarters of 1973-74 (April–December 1973), however, witnessed a marginal decline in the export value at Rs. 499 million as against Rs. 504 million in the corresponding period of 1972-73. Quantumwise, the exports were of the order of 54 million kgs. and 71 million kgs. in the two comparable periods. The decline in quantity during the period under review of 1973-74 was partially offset due to rise in unit export price.

Indian tobacco is exported to more than 50 countries of the world. During April–December 1973, the major destinations were the U.K., U.S.S.R., Japan, Irish Republic and Bangladesh.

India produces a wide variety of tobacco. Flue cured virginia is, however, the main variety grown. It is largely used in the manufacture of cigarettes. Indian Flue Cured Virginia tobacco compares favourably with the American variety so far as the nicotine content is concerned. The cigarette tobacco produced in India is known for its bright colour, mildness, less nicotine content, agreeable flavour and good burning quality. Besides, it is suitable for blending with other tobaccos. The white Burley Natu and Turkish tobaccos are also grown for use in manufacture of cigarettes. The lighter type Sun Cured Country Natu tobacco is used in the manufacture of pipe tobacco. The Lanka tobacco is used for cheroots and compares favourably with similar tobaccos in other countries. The 'Moti Hari' tobacco is a stronger variety. The Indian Jutti tobacco is a variety with low nicotine content. For bidi manufacture, India produces the Nipani tobacco.

The Central Tobacco Research Institute has been set up in the country for conducting fundamental research on all tobaccos and applied research on all the flue-cured Virginia and Lanka tobaccos. Experimental stations and subsidiary research laboratories have also been established in different parts of India for different grades of tobacco. Besides, soil survey and soil testing are being carried out constantly for growing tobacco of improved quality. A fully developed extension service operates under the State Agricultural Departments to carry the benefits of the research to farmers. Constant efforts are made to grow tobacco in light soil areas in order to produce a variety with less nicotine content.

The quality of India's exportable varieties of tobacco is assured by a very strict and elaborate system of inspection, checks and controls and compulsory grading under 'Agmark'.

COMPULSORY INSPECTION FOR FROZEN SHRIMPS

The Export Inspection Council of India has decided to introduce compulsory bacteriological inspection for frozen shrimps.

In the context of marine products, it may be mentioned that the Food and Agriculture Organisation has formulated a "Code of Practice" which deals with fresh fish for human consumption. Such fish is chilled but not frozen. The code covers all aspects and stages of handling fresh fish at sea and on shore. The Indian Standards Institution has also formulated a Code for sanitary conditions, handling and transport in fish industry. This code is designed to satisfy sanitary requirements in U.S.A., Canada etc. regarding handling, storage and packaging of fish in the producing countries.

INDO-YUGOSLAV JOINT VENTURES IN THIRD COUNTRIES

Detailed exercises for undertaking joint industrial ventures by India and Yugoslavia in third countries have been initiated. In this connection, a working group has already been set up with the Projects Equipment Corporation of India and Energo Invest of Yugoslavia to look after the implementation of the various proposals. Both sides have embarked upon some specific fields where joint participation in third countries is rated bright. These include-power generation, transmission and distribution; building petroleum refineries, fertiliser and chemical plants, general purpose machine tools, textile mills and manufacture of plastic films, capacitors, ferrites etc.

Besides, there is sufficient scope for consultancy services for joint pre-investment feasibility studies and project reports in third countries. This sphere may cover steel rolling mills and light engineering factories for production of sewing machines and light general purpose tools.

Efforts are on way to increase India's exports to Yugoslavia. For 1973, the exports are estimated around Rs. 190 million as against Rs. 151 million in 1972. The commoditywise composition of Indian exports reveals that it is narrow in range and small in volume. Six products, namely tanned skins, tea, groundnut, pepper, rubber tyres and iron-ore constituted as much as 47 per cent of the total Indian exports to Yugoslavia. The effort now is to diversify the trade pattern suiting the immediate interests of both the countries.

BREAKTHROUGH IN EXPORT OF CASTOR OIL

The State Trading Corporation of India Limited, Chandralok, 36 Janpath, New Delhi-1, has effected a breakthrough in export of castor oil. Out of the total exports of 30,000 tonnes of such oil by S.T.C., during 1972-73, General Currency Area accounted for as much as 24,000 tonnes. Value-wise, it was Rs. 135.2 million in the first eight months of 1973-74.

India's overall exports of castor oil rose from Rs. 61.80 million during 1971-72 to Rs. 226 million in 1972-73.

Major destinations of Indian castor oil were U.S.A., U. K., Czechoslovakia, France, Japan and Netherlands.

COIR EXPORTS DURING 1973

Coir and coir products exports from India during 1973 earned foreign exchange to the tune of Rs. 149.5 million. In terms of quantity, 45,791 tonnes of coir and coir goods were exported. In comparison, during the year 1972, coir and coir products valued at Rs. 152.4 million (51,482 tonnes) were exported.

Itemwise exports of coir and coir goods during 1972 and 1973 are given on the next page :—

Items	January-December, 1972 Quantity in Qtls.	January-December, 1972 Value in Rs.	January-December, 1973 Quantity in Qtls.	January-December, 1973 Value in Rs.
Coir Fibre	3,490	5,59,355	3,324	4,35,791
Coir yarn	3,29,121	8,29,92,638	2,78,715	7,58,97,923
Coir Mats	1,25,129	5,05,20,181	1,31,107	5,88,16,950
Coir Mattings	18,836	68,01,121	25,402	97,28,313
Coir Rugs and Carpets	29,293	1,01,99,864	7,764	29,57,231
Coir other sorts	332	1,29,069	239	1,11,645
Curled coir	7,176	9,22,030	10,067	12,82,763
Coir Rope	1,440	8,33,111	1,284	2,44,277
Rubberised coir goods	1	1,073	7	7,368
Total	5,14,818	15,23,58,442	4,57,909	14,94,82,261

It would be seen from the above table that the exports of items, such as, coir yarn, coir fibre and coir rugs and carpets have declined during the year 1973. However, the exports of coir mats, coir mattings and curled coir have shown an upward trend.

The export earnings of coir and coir goods would have been higher during the year 1973, but for the slight decline in the export performance of coir yarn etc. Higher share of finished coir products and the increase in unit value helped to sustain the value of exports of coir and coir goods during the year 1973 as compared to that of 1972.

The Coir Board, Ernakulam (Kerala), has successfully introduced quality control and pre-shipment inspection for coir goods. Coir door mats and coir yarn exported in pressed bales have been brought under quality control and pre-shipment inspection scheme. A system of registration of exporters is also in vogue. Exporters who wre registered with the Coir Board, have to sign a Code of Conduct. The exporters failing to fulfil their export obligations are removed from the list of exporters, if considered necessary.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

AIR AND GAS COMPRESSORS

With an installed capacity of 11,000 numbers per year, the air compressors industry in India is spread over 13 manufacturing units. Of these, three units are in the public sector. Except for M/s. Triveni Engineering Works Ltd., New Delhi and M/s. Tecalmit (Hind) Ltd., 24 Paraganas (West Bengal) and M/s. Elgi Equipment Pvt. Ltd., Coimbatore, other units, both in the private and public sector have access to foreign collaboration from countries like Sweden, U.K., France, U.S.A., Japan and Italy.

In addition to the present installed capacity, additional capacity for 160 numbers of air compressors and 90 numbers of gas compressors has been approved. Additionally, M/s. Bharat Pumps and Compressors Ltd., Allahabad, in the public sector, have been approved to produce 3,200 tonnes per year. Total actual production during 1972 was in the range of 5,200 numbers valued at Rs. 81.5 million as compared to 5,000 numbers worth Rs. 76 million in 1971. Under the governmental policy, the air compressors industry is open for further licensing and foreign collaboration is considered on merits. Even import trade is allowed to actual users.

Air compressors find application mainly in drilling rigs as source of power for pneumatic tools, workshops and for process application in fertilizers and metal producing industries. In addition to compressors from 2 cfm to 4,500 cfm, small capacity and high pressure compressors (upto 3,000 psi) are also being manufactured in India. In the field of heavy compressors, one of the public sector units, M/s. Bharat Pumps and Compressors Ltd., Allahabad, would be taking up manufacture of reciprocating compressors. Capacities of these compressors would range from 6 cfm to 14,500 cfm and the discharge pressure would go upto about 6,500 psi. Another public sector unit, namely, M/s. Bharat Heavy Electricals, Hyderabad, will manufacture centrifugal compressors of high discharge capacities for application in steel plants, fertilizers and chemical and petroleum industries. This is significant as currently such special compressors are procured through import.

The air compressors industry is one where appreciable progress has been achieved in terms of import substitution. The indigenous content for high capacity compressors upto 4,500 cfm and 10 Atms discharged pressure is in the range of 70 to 75 per cent. In case of smaller types, the indigenous content is far higher to the extent of 90 to 99 per cent. Among the materials required for the manufacture of air compressors, grey cast iron castings, steel forgings, steel sheets and plates and steel rounds are available indigenously. Other required materials, such as, alloy steel strips, lubricating oil pumps, blades for centrifugal compressors and piston rigs are, however, procured through import.

Alongside progress in import substitution, the industry has achieved considerable success in the export field also. While the export value of air and gas compressors was only Rs. 2.55 million in 1971-72, it rose to Rs. 4 million in 1973-74. Larger offtake by the Arab Republic of Egypt and the emergence of fresh markets in Iraq, Poland and Italy contributed to this uptrend. Arab Republic of Egypt and Iraq together accounted for more than Rs. 1.25 million. The offtake of Philippines was of the order of Rs. 282,000, followed by that of Poland at Rs. 267,750, Italy at Rs. 223,610, Australia at Rs. 207,710 and Sri Lanka at Rs. 204,140. France, Malaysia, Spain and Sweden were the other important buyers during the year. Interestingly, quantumwise, the export during 1971-72 was 2555 numbers while in the subsequent year, it was only 1,640 numbers. This indicates an improvement in the unit value of export price for the product.

IMPORT SUBSTITUTION IN AERONAUTICS

The various sectors of Indian economy have been resorting to import substitution in recent years. In this context, the important sector of Aeronautics too has played a significant role in saving sizeable outgo of foreign exchange through increased import substitution.

M/s. Hindustan Aeronautics Limited (HAL), Indian Express Building, Vidhana Veedhi, Bangalore, a public sector undertaking engaged in the manufacture of different types of aircrafts, helicopters and ancillaries and accessories in the line, have been able to save foreign exchange to the tune of Rs. 4.2 million during 1972-73, consequent on manufacture of a variety of items indigenously.

The items developed during the year include aluminium copper alloy sheets, aluminium copper alloy extrusions, chrome-molybdenum steel, manganese steel, chrome silicon steel, ground starting unit for airborne electronic equipment and glass cloth. This is expected to save substantial amount of recurring foreign exchange expenditure in the coming years. Apart from this, HAL were also able to save an outgo of Rs. 5 million per annum in foreign exchange through undertaking manufacture of a variety of forgings and castings indigenously at their foundry and forge units at Bangalore Complex and Koraput Division.

Pursuant to a vigorous drive for progressively diminishing their dependence on imports, HAL have set up a separate Research and Development (R & D) Department at their Bangalore office to intensify pace of import substitution. Besides co-ordinating the indigenisation activities at their divisions located at Bangalore, Hyderabad, Nasik, Kanpur and Koraput, the R & D Department is maintaining close liaison with public sector undertakings, private industries, Research and Development establishments and other institutions for developing indigenous substitutes for imported materials, components and systems.

Alongside achieving considerable progress in the field of import substitution, HAL have also made considerable headway in the export field. From Rs. 1.10 million in 1971-72, HAL's exports nearly doubled to about Rs. 2 million in 1972-73. During 1973-74, their exports are estimated to reach a new high at Rs. 3.20 million.

HEC'S PROGRESSIVE MARCH

M/s. Heavy Engineering Corporation Limited (HEC), Ranchi, a premier heavy engineering unit, engaged in manufacture of heavy machinery, structurals, machine tools and a variety of equipment in the line achieved significant growth in production during the first three quarters of 1973-74 (April-December 1973) against the targetted figures set for various items during the period as also over the production during the corresponding period of the preceding year (April-December 1972).

All the three plants of HEC,—Foundry forge Plant, Heavy Machine Building Plant and Heavy Machine Tool Plant—witnessed alround progress in production. For instance, production in the Foundry Forge Plant during April to December 1973 has been 98 per cent of the target. The value of production was Rs. 115.6 million against the target of Rs. 117.8 million. The production during the corresponding period of the preceding year (April-December 1972) was of the order of Rs. 81 million. In the Heavy Machine Building Plant, cumulative achievement in structural production during the period under review of 1973 has been 119.2 per cent of the target. The production was estimated at Rs. 14.5 million against the targetted figure of Rs. 12.12 million. During the same period of 1972, the production was of the order of Rs. 12.67 million. In mechanical equipment area too, the output looked up sizeably. The over-all achievement in output was 81.4 percent of the target. In terms of value, the production was estimated at Rs. 213.2 million as against the target of Rs. 261.7 million. In Heavy Machine Tool Plant, production of jobbing works and accessories for the period April to December, 1973 was Rs. 2.60 million against a target of Rs. 2.69 million. Viewed against the production during the corresponding period of 1972-73 at Rs. 0.98 million, increase in production is indeed noteworthy. So far as machine tool production was concerned, the achievement during period under review was as high as 79.8 percent of the target. The actual production amounted to Rs. 5.90 million against the target of Rs. 7.40 million.

The installed capacity of the Foundry Forge Plant of HEC is of the order of 180,000 tonnes of gross production per year and a saleable production of approximately 120,000 tonnes. Heavy Machine Building Plant have an installed capacity to manufacture 80,000 tonnes of heavy machinery and 25,000 tonnes of structurals per annum while the Heavy Machine Tool Plant's capacity is of the order of manufacturing 278 machine tools weighing 10,000 tonnes per year.

The Heavy Machine Building Plant is designed to manufacture various items of heavy machinery including epuipment required for coke ovens, blast furnces, steel melting, crushing, and grinding, rolling mills, cranes, excavators and heavy oil drilling rigs. The Foundry Forge Plant is designed to meet the requirements of casting and forgins of Heavy Machine Building Plant and Heavy Machine Tool Plant as well as the requirements of other heavy engineering industries.

The Heavy Machine Tool Plant is designed to manufacture various tools including centre lathes, radial drilling machines, horizontal boring and turning mills, vertical boring and turning mills, plano milling machines and cylindrical and rolling grinding machines.

CHANDRAPURA THERMAL POWER STATION

The expansion scheme of Chandrapura Thermal Power Station in Bihar by M/s. Heavy Electricals (India) Limited (HEIL), Bhopal, is under progress. A 1,20,000 KW Steam Turbine set, the first of the two required for this scheme, will be commissioned shortly.

The estimated annual energy to be delivered by this one unit alone to the grid of this area would be of the order of 700 million Kwh. This will raise the total installed capacity of the system to 1,061,000 KW.

Out of this, 95,000 KW of power will be supplied to the metropolitan city of Calcutta. The Bokaro Steel Plant would get 65,000 KW of power during 1973-74 and 200,000 KW at the end of Fifth Plan.

HEIL also supplied turbine for second set. Apart from the standard TG sets, scope of supply also covers a large number of items like C.W. Pumps with motors, Oil Purifiers, Isolated Phase Bus Duct, Electrical Control Panels and Motor control centres. The associated high temperature, high pressure piping and valves for complete feed heating cycle are under supply.

In addition to the supply of these equipment, HEIL also engineered various schemes like instrumentation and control, layouts of all equipment and associated piping in the Power House.

The first set of the expansion project will consume about 1.5 million gallons of water and 1150 M/T of coal daily.

Located at about 60 kms. from Dhanbad on the banks of the river Damodar with its plentiful water and sorrounded by a number of coal mines, the Chandrapura Thermal Power Station is already equipped with three imported thermal sets with a total generating capacity of 420,000 KW of electric power.

Besides supplying power for domestic, irrigation and rural electrification, the Power Station is supplying power to major industries which include the steel plants at Jamshedpur and Durgapur, National Coal Development Corporation, Railways, Chittaranjan Locomotive Works, Aluminium Corporation of India, Associated Cement Company, Indian Iron and Steel Co., Hindustan Cables and also to major distributing licensees supplying power to collieries, State Electricity Boards of West Bengal and Bihar.

FINISHED LEATHER FROM SKIN

India has always held a prominent position among the countries of the world in the export of leather and leather goods. The composition and nature of her exports has undergone a continuous change during the course of the past few decades. With the increasing demand for various types of finished leather in foreign markets, there is a vast scope for the establishment of medium and small scale units in the country and for converting the existing tanning units to produce finished leather for export.

The main raw materials for the manufacture of various categories of finished leather are goat and sheep skin, tanning chemicals, dyes, finishing auxiliaries, etc. Most of the chemicals, tanning materials, dyes, finishing auxiliaries are available indigenously, while a few tanning chemicals which are not available in the country are permitted to be imported by the units in this field. A plant with a capacity of 760,000 skins per annum is considered an economic unit in the medium scale. The investment on plant and machinery is calculated to be about Rs. 4 million. Although total investment for a medium scale project with the above capacity is below Rs. 10 million, the establishment of such a venture requires an industrial licence under the Industries (Development and Regulation) Act, 1951 as the foreign exchange requirements for import of capital equipment is more than the prescribed exemption limit. Although no foreign collaboration (financial or technical) is considered necessary in this field, yet in the case of highly export-oriented schemes foreign collaboration involving international marketing arrangements may be considered on merits.

The Development Council for Leather and Leather Goods Industry has fixed up a targetted production of

66.26 million numbers of tanned skins by 1973-74. It is estimated that about 60 million pieces of skins are being processed at present out of which the share of 13 large scale units is approximately 10 million numbers. Thus, development of skin tanning industry is mainly concentrated in the small scale sector and the contribution of large scale sector has been limited to only 20 per cent of total production.

In tune with Government of India's policy to promote export trade in finished leather products, export of unfinished or semi-finished leather is restricted. In this respect, India's footwear industry has to play a major role. The industry's foreign exchange earning during 1972-73 totalled Rs. 128.60 million as compared to Rs. 117.60 million in the preceding year. USSR, USA, UK, Nepal, Australia, Denmark, Canada, Canary Islands and Netherlands were the significant markets during 1972-73.

HINDUSTAN PAPER CORPORATION'S NEW PROJECTS

Hindustan Paper Corporation Limited is implementing a Newsprint Project in Kerala which will provide 70,000 tonnes of newsprint and 10,000 tonnes of magazine paper. This project is likely to go into production in the beginning of 1976 instead of its originally planned time schedule of 1977-78.

At present, India is importing about 0.2 million tonnes of newsprint every year at a cost of about Rs. 270 million. The import bill is likely to go up by another Rs. 100 million due to worldwide spurt in the selling price of newsprint. The present production of newsprint in the country is about 40,000 tonnes, and it is expected that the indigenous production of the existing newsprint mill in the country will go up to 75,000 tonnes by the end of 1974.

The present capacity of paper industry in the country is about 0.95 million tonnes. The targets for the Fifth Five-Year Plan (1974-79) have been placed at 1.35 million tonnes of production and 1.5 million tonnes of capacity.

Hindustan Paper Corporation's Nagaland Pulp and Paper Project is well on its way of implementation. Orders for machinery worth Rs. 120 million have already been placed and further orders for Rs. 67 million are to be placed very shortly. This mill has a capacity of 30,000 tonnes per annum and is likely to go into production in 1976. The Corporation's two projects in Assam may materialise during the Fifth Five-Year Plan which will give the country an additional capacity of 1,60,000 tonnes. Hindustan Paper Corporation will be developing the capacity of about 0.2 million tonnes of paper in the country.

ROAD ROLLER PRODUCTION IMPROVES

The production of road roller industry in India improved from merely 142 numbers in 1968 to 736 numbers in 1972, registering a more than five-fold increase. The production is estimated to go up to about 2,000 road rollers by end of 1973-74 while during the same period the installed capacity is estimated to be about 3,000 numbers.

The road roller industry is included in the priority list of industries in India. There are 12 units engaged in the line. The official policy is to encourage investment in manufacture of this item, particularly in the capacity range 8 to 10 tonnes.

The industry uses about 95 per cent indigenous components, and the imported raw materials required by the manufacturers in the line include M.S. plates, sheets, alloy steel bars and rods. Foreign collaboration is not allowed in this industry.

With increasing indigenous production, the import bill for the item has been reduced from nearly Rs. 1 million in 1967-68 to about Rs. 0.30 million in 1972-73. U S.A. has been the main supplier.

SEWING MACHINES

Export of Indian sewing machines and parts has shown a steady trend. During 1972-73, the exports of domestic as well industrial sewing machines were of the order of Rs. 5.13 million. Of this, the share of complete sewing machines with or without stand was Rs. 3.45 million. The major buyers were Sri Lanka, Canada, Indonesia, Thailand, Nepal and U.S.A.

In the organised sector, there are 5 units manufacturing sewing machines and parts. Total installed capacity during 1972 was 533,500 numbers against 493,000 numbers during 1971. The names of the firms and annual installed capacity in respect of each are : M/s. Jay Engineering works Ltd., Calcutta 3,00,000 numbers; M/s. Sansar Machines Pvt. Ltd. Delhi-32 72,000 numbers; M/s. Rita Mechanical Works Ludhiana 33,500 numbers; M/s. British Machinery Supplies Co., Faridabad 28,000 numbers and M/s. Jay Engineering Works Ltd., Hyderabad 1,00,000 numbers. The combined installed capacity of all the units is of the order of 533,500 numbers.

As sewing machine is a fairly labour intensive product, a number of small scale units has also started production of parts and components and some even assemble the sewing machines. According to a rough estimate, there are more than 200 such units in the small scale sector. These are mainly located in Punjab, Uttar Pradesh and Delhi. Keeping in view the capacity of these units, which is reckoned at 0.2 million numbers, the total installed capacity, both in the organised and small scale sectors comes the about 0.73 million numbers.

Demand for sewing machines, domestic as well as industrial, is rising every year. It is estimated that by the end of Fifth Five Year Plan (1974-79), the demand for sewing machines will be of the order of over 1 million numbers. There would be, therefore, a large gap between demand and production. Thus, in this area there is a good scope for new units to come up. Imports of domestic sewing machines and parts are banned though there is a provision for actual users to import those industrial sewing machines which are not made within the country. The present policy of the Government of India also permits foreign collaboration for the manufacture of industrial sewing machines (such as, lock stitch, chani stitch, zig zag stitch, button hole stitch, hat back stitch, button sewing stitch and cross stitch) upto the speed range of 8,000 stitches per minute.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

400 KILO VOLTS CURRENT TRANSFORMER

Bharat Heavy Electricals Limited, Bhopal has developed a 400 Kilo Volts Current Transformer suitable for a highest system voltage of 420 Kilo Volts (basic insulation level of 1425 kilo volts peak) and a continuous current rating of 2000 amperes. The current transformer which is meant for metering and protection purposes in a transmission system can be made to conform to national and international standards.

In the design of 400 kV Current Transformer, paper tape 60 kms. long has been carefully wound by skilled hands in an air conditioned atmosphere and then processed under high degree of vacuum and controlled heat. Considerable design skill was necessary in evaluating complex distribution of electrical, mechanical and thermal stresses, and for this purpose some of the sophisticated techniques as field plotting/model studies were resorted to.

It is a matter of great satisfaction that the development work taken up in 1972 at BHEL, Bhopal has become a reality with a successful testing of the prototype. BHEL, Bhopal are the first in the country who have successfully utilised expertise gained over the years in producing a product entirely on their own, well in time to meet the growing needs of the country and have thus helped in saving considerable amount of foreign exchange.

NEW TOMATO VARIETY INTRODUCED

At a farm at Vedapatti, Coimbatore, a new tomato variety has been introduced which yields about 22,000 kgs. per acre. This outturn is some 7,000 kgs. more than that of the local tomato variety. The new tomato variety flowers in 35 days whereas the local variety takes 40 days to flower. This semi-climbing new variety ripens in 65 days time whereas the first picking of fruits from a local bushy type variety starts only on the 70th day.

NEW TYPE OF POWER PLANT DESIGNED

Indian Scientists have designed a power plant capable of producing electricity directly from hot gas similar to world's unique MHD generator in Moscow.

The plant, called magneto hydro-dynamics (MHD) generator will disperse with moving parts, steam cycles and turbine and will produce power five to twenty per cent less expensive.

FLYING CUT-OFF MACHINE

Metazman India, a firm located at Indore, Madhya Pradesh, has designed and developed indigenously a pneumatically operated fully automatic flying cut-off machine capable of cutting steel pipes from 15 mm to 100 mm nominal bore. The unit which is capable of cutting up to 10 pipes per minute with a remarkable accuracy in length of plus/minus 10 mm is a real achievement.

ORE BENEFICIATION

Exhaustive batch and pilot plant scale investigations have been undertaken at National Metallurgical Laboratory (NML) Jamshedpur, which cover almost all types of ores from existing as well as virgin mines. The NML has set up an integrated Mineral Beneficiation plant to treat upto 5 tonnes/hour of ore depending upon the flow-sheet to be employed. The planning, layout and engineering of this plant has entirely been done by the staff of NML. The necessity of sending heavy tonnages of ore samples to overseas laboratories for continuous trials of beneficiation processes has been eliminated by the availability of this facility.

The laboratory has carried out extensive work on the development of raw materials, such as, phosphates and pyrites. Flow-sheets have been developed for economic upgrading of low grade phosphates and pyrites and production of concentrates suitable for fertilizer industry.

Using the low-shaft furnace technique, ferro-phosphorus has been successfully produced and the NML shall be in a position to undertake sponsored investigations for production of Fe-P with phosphate rock, thereby meeting the indigenous requirements of this product. The production of steel for use by re-rolling industries as well as for feeding the requirements of steel foundry using basic pig iron, has been successfully achieved in basic-lined side-blown converter and the process know-how has so far been released to 3 firms for commercial utilisation.

Import substitution studies have yielded a number of products that can be commercially manufactured. Thus, nickle free heating elements will be shortly produced by a licensee at Faridabad using the NML know-how. The technology for production of ferro-alloys by alumino-thermic reactions is already under commercial production and has enabled the country to save foreign exchange to the tune of about Rs. 1 million per year.

PRODUCTION OF CEMENT CLINKER FROM FLYASH

The Central Salt and Marine Chemicals Research Institute has successfully developed a process for producing high strength cement clinker using flyash in place of clay in the raw mix used for the manufacture of portland cement.

The Institute has worked out an indigenous technology for manufacturing bromine from marine bittern (liquor left out after the recovery of salt from sea water) by Steaming-out method. The process has been successfully tried on a pilot plant scale and a firm has already obtained this process and started production. Bromine and its compounds – both organic and inorganic – have numerous uses which include soil and grain fumigants, anti-knocking agents in aviation fuels, pharmaceuticals, dyes, photographic chemicals, fire retardants etc.

POTASSIUM CARBONATE

Potassium carbonate is an important chemical which is in high demand in glass and ceramic industries. It is a basic chemical for the preparation of certain pharmaceuticals and numerous inorganic chemicals. Its use in toilet, cosmetics, for wool scouring and in the preparation of dye thickners in the textile industry is indispensable. A process has, therefore, been worked out for the manufacture of potassium carbonate using ion-exchange technique by Central Salt Marine Chemicals Research Institute, Bhavnagar.

CHEMICALS - COMMERCIAL IMPLEMENTATION

Considerable progress has been registered in the commercial implementation of some of the high volume/value projects, such as, chloro-methanes, chlorobenzenes, vitamin C and opium alkaloids according to the National Chemical Laboratory processes.

M/s. Hindustan Organic Chemicals (HOC), Rasayani, have completed the installation of 4000 TPA plant for chlorobenzenes based on NCL know-how. The plant will be commissioned in the next few months. The acetanilide plant of HOC attained near-rated capacity and the value of production achieved during 1972-73 amounted to over Rs. 1.38 million.

Indigenous tanning material and improved tanning and finishihg processes developed at Central Leather Research Institute (CLRI), Madras have helped replace to some extent the scarce and imported materials with newer ones for local use, worth Rs. 20 million a year. The saving effected by way of import substitution through processes developed for the manufacture of belting leather, picking band straps and other industrial leathers have resulted in a gradual reduction of imports of these items.

The process for the production of hydrogenated castor oil developed by the Regional Research Laboratory (RRL), Hyderabad, has earned nearly Rs. 7.5 million worth of foreign exchange so far. Silicon carbide, having a wide range of industrial and strategic applications, is also being produced using the process developed and the prototype furnace has already been built and commissioned by the same laboratory. The country's present requirements amounting to over Rs. 4 million per annum are met by imports. The process has been leased to a firm for commercial exploitation.

INDIA'S TRADE WITH SCANDINAVIAN COUNTRIES

Trade between India and Scandinavian countries–Sweden, Denmark, Norway, Iceland and Finland–has been steadily rising over the years. Of the five, Sweden has been the biggest trade partner of India. Total value of Indo-Swedish trade rose from Rs. 187.5 million in 1971-72 to Rs. 346.6 million in 1972-73. Over this period, India's exports to Sweden have risen by more than 250 per cent whereas imports rose by only 50 per cent. The adverse balance of trade with that country was thus narrowed from Rs. 66.7 million in 1971-72 to Rs. 23.4 million in 1972-73.

Indian clothing is the largest single item which finds its way to Sweden. It earned Rs. 63.6 million in 1972-73 as against Rs. 23.3 million in 1971-72. Iron and Steel constitutes another item which improved its offtake several times in 1972-73 (Rs. 19.8 million) from a paltry amount of Rs. 0.5 million in the preceding year. Other significant items of export were leather (Rs. 16.9 million in 1972-73 and Rs. 0.5 million in 1971-72), bed sheets (Rs. 13.5 million and Rs. 4.6 million), cotton piece goods (Rs. 10.4 million and Rs. 8.5 million), fish and fish preparations (Rs. 5.4 million and Rs. 0.1 million), coffee (Rs. 4.3 million and Rs. 0.5 million, carpets (Rs. 2.2 million and Rs. 1.4 million), hand tools and small tools (Rs. 3.8 million and Rs. 4.6 million).

Sweden supplied India with machinery (electrical and others) worth Rs. 66.9 million in 1972-73 as against Rs. 53.5 million in 1971-72. Paper and paper boards worth Rs. 55 million were imported against Rs. 13.7 million in the preceding year. Other items of import into India include pulp, transport equipment, chemicals, etc. Total imports in 1972-73 were of the order of Rs. 185 million whereas exports amounted to Rs. 161.6 million.

Over the last 2 years, Indo-Danish trade has grown in terms of value. India's exports went up from Rs. 38.5 million in 1971-72 to Rs. 56.8 million in 1972-73 indicating a rise of 46 per cent. Imports, however, came down by 13 per cent from Rs. 31.3 million to Rs. 27.2 million in 1972-73. The favourable balance of trade grew from Rs. 7.4 million in 1971-72 to Rs. 29.6 million in 1972-73.

Indian clothing again was the most popular item in Denmark. Its exports rose by about 150 per cent–from Rs. 6.0 million in 1971-72 to Rs. 14.7 million in 1972-73. Bed sheets and towels etc. accounted for Rs. 5 million (Rs. 3.8 million in 1971-72), leather Rs. 2 million (Rs. 0.6 million), footwear Rs. 3.7 million (Rs. 2.1 million) coir carpets Rs. 2.5 million (Rs. 1.4 million), cotton piece goods Rs. 4.5 million (Rs. 3.3 million). Indian fish and fish preparations also seem to be popular, although in 1972-73 the exports were down at Rs. 3.9 million as compared to Rs. 4.5 million in 1971-72.

India's imports from Denmark included machinery items (Rs. 14 3 million in 1971-72 and Rs. 15.8 million in 1972-73), chemicals (Rs. 2.7 million and Rs. 3.4 million), medical and pharmaceutical products (Rs. 4.6 million and Rs. 4.1 million) and professional and scientific instruments (Rs. 5 million and Rs. 1.1 million).

Indian imports from Norway showed an upward trend in 1972-73 (Rs. 51.5 million) over the preceding year (Rs. 38.7 million). The largest share was occupied by chemicals and fertilisers. In 1971-72, the import of these items constituted nearly 75 per cent of the total imports, the value being Rs. 27.4 million whereas in 1972-73 it rose to Rs. 29 million. This was followed by machinery items worth Rs. 1.9 million in 1971-72 and Rs. 4 million in 1972-73. Paper and paper board, however, registered a decline from Rs. 4.6 million in 1971-72 to Rs. 3.8 million in 1972-73.

Exports to Norway during 1972-73 amounted to Rs. 26.5 million which were higher by 53 per cent over 1971-72 level of Rs. 17.2 million. Coffee was supreme in Indian exports to Norway. It registered an increase from Rs. 3.9 million in 1971-72 to Rs. 9.2 million in 1972-73. Clothing and bed sheets were the next best, registering an increase from Rs. 4.2 million in 1971-72 to Rs. 7.9 million in 1972-73. Other items having significant exports to Norway in 1972-73 were mica, coir yarn, towels, jute manufactures and works of art.

The balance of trade which was adverse against India in 1971-72 by Rs. 21.5 million rose to Rs. 25 million in 1972-73.

Trade with Finland also shows a steady rise from Rs. 29.6 million in 1971-72 to Rs. 35.7 million in 1972-73. India's balance has been adverse though the gap has been narrowed to Rs. 14.9 million in 1972-73 from Rs. 20.8 million in the preceding year. Exports during 1972-73 at Rs. 10.4 million against Rs. 4.4 million only in 1971-72, showed a rise of 136 per cent.

Cotton manufactures and clothing were the most sought after goods from India. Their exports registered an increase from Rs. 1.7 million in 1971-72 to Rs. 7.8 million in 1972-73.

Imports from Finland were steady at Rs. 25.3 million in both the years under review. While imports of paper and paper board declined from Rs. 11.6 million in 1971-72 to Rs. 8.2 million in 1972-73. Electrical machinery, apparatus and appliances also showed lesser imports - from Rs 12.2 million in 1971-72 to bare Rs. 4.4 million in 1972-73. Newsprint paper, however, rose from Rs. 0.1 million in 1971-72 to Rs. 7.2 million in the following year

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India's trade with Iceland is rather small. Exports during 1972-73 were only Rs. 0.7 million against Rs. 0.4 million in the previous year and were limited to hessian cloth, handicrafts and tea. Imports from that country were negligible.

The Scandinavian countries have much in common. All have used their location to great advantage by developing their fishing and ship-building industries. They provide a high level of living to a joint population of about 20 million. This they have done by providing specialised products and services which can be marketed in highly industrialised and heavily populated countries elsewhere. Thus, Iceland and Norway have specialised in fishing. Norway, Finland and Sweden market their forest products and have a highly developed ship building industry. Norway and Sweden have harnessed great amount of hydro-electricity which they use for metal smelting and electro-chemical manufacturing. Denmark has developed dairying and dairy machinery. Some of their expertise, such as, development of fisheries, fishing trawlers and dairies is of interest to India and has been utilised from time to time. India also imports paper and paper pulp in fairly large quantities from these countries and may be in a position to increase its offtake if more supplies are available. So for India's exports are concerned, Indian readymade clothes seem to be the major contributors (34 per cent of total exports during 1972-73). Other manufactures, such as, piecegoods (mostly handlooms), towels and bedsheets account for another 16 per cent. India's exports are thus mostly non-traditional. However, the quantum of India's exports does not compare favourably with exports to other European countries. India's exports at Rs. 256 million in 1972-73 were not adequate even to pay for her imports from this region, amounting to Rs. 289 million in 1972-73. There is thus a clear need for the businessmen from Scandinavian countries and India to explore possibilities of expansion and diversification of trade both ways. □

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INDIAN CONSULTANCY IN IRRIGATION AND POWER FOR COUNTRIES ABROAD

Rapid development of technical know-how and expertise achieved by Indian economy in various fields of economic activity during the span of the last two decades has led to the establishment of a new class of entrepreneurs termed as 'consultants'. Besides providing consultancy services at home for different projects in industrial field in recent years, a growing number of firms in line have come to contribute their mite in the development of overseas economies too.

M/s. Water and Power Development Consultancy Services (India) Ltd. (WAPCO), L-18, South Extension-II, New Delhi-49, have a proven record of offering their engineering and related technical consultancy services for development of irrigation and power resources in a number of countries. During 1971-72, in the face of stiff international competition, WAPCO were able to bag the first major international consultancy assignment from the Government of Afghanistan for Khanabad Irrigation Project in Northern Afghanistan. The proposed project is to be aided through the World Bank. The total value of the contract is of the order of Rs. 3 million. The project work commenced in the first week of March 1973. This achievement can be regarded as a real breakthrough in international consultancy. Earlier in 1971, an agreement had been entered into between WAPCO and M/s. Afghan Breshna Moassessa (ABM) for providing consultancy services for Bamion, Phule Khumri and a number of other Micro-Hydel Schemes. Only recently, they have completed feasibility study in respect of six micro-hydel schemes and a report related to one of these has already been submitted to ABM.

They have entered into an agreement with the River Valleys Development Board of Sri Lanka for providing consultancy services for the Uda Walave Project in that country. A team of three experts was provided by the firm originally for the period of 18 man-months for the project work. Being fully satisfied with the services of these experts, Sri Lanka Government, however, extended the stipulated period from 18 to 26 man-months. The project is being financed by the Asian Development Bank. As per the terms of the agreement, a fee of U.S. $ 1,000 per man-month has been agreed upon. The work on the project has already commenced from November 1972. Apart from this, another assignment for preparation of designs, specifications, etc. for the Kotamale Project in the same country has been entrusted to the firm.

WAPCO are instrumental in maintaining the tempo of their bids in international field. They have been listed as consultants for submitting technical proposals in a number of cases financed by international financing agencies, such as, Asian Development Bank (ADB), the International Bank for Reconstruction and Development (IBRD) and many others. They have been associated with many projects as consultants in a number of countries abroad. For instance, in Laos they have acted as consultants in the investigation of the Ban Mak Nao Lift Irrigation Project, the field work of which was completed in 1972. They have also submitted proposals for a status report on the ground water potential for the Lagos City and its environs in Nigeria. The outcome of the bid is awaited. A proposal in the field of Public Health Engineering has also been submitted to that country. An agreement with the Government of Philippines under the Colombo Plan on Electric Power System Development plans and food/erosion control system is in offing. Besides, they have offered their services for Angat-Magat Integrated Agricultural Development Project in that country which is to be financed by the ADB. Currently, they are hopeful of receiving a number of consultancy assignments from other countries, such as, Burma, Nepal, Iraq, Fiji Islands, Bangladesh, Ecuador and Iran.

At domestic level, WAPCO were employed as consultants by the Ministry of Irrigation and Power, various public sector undertakings and other organisations.

LEATHER TO WORLD MARKETS

With quantum of exports amounting to as much as 90 per cent of the total production, M/s. T. Abdul Waheed and Company, 19, Vepery High Road, Periamet, Madras, improved their exports of leather sharply during 1972-73 by over 100 per cent as compared to their export earnings in 1971-72. The export shot up to Rs. 92 million from Rs. 42 million during the respective years.

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Even during the first three quarters of 1973-74 (April–December 1973) their exports fetched as much as their entire preceding year's export earning. The exports during the period were estimated at over Rs. 92 million equivalent to that during the entire year of 1972-73. In terms of quantity, 3.78 million pieces of leather were supplied to about 18 countries.

Of the total export realisation, wet blue chrome goat skins constituted the most popular leather variety abroad which earned for the firm the bulk of foreign exchange at Rs. 73.75 million, accounting for about 80 per cent of their total overseas supplies. Over 3.15 million pieces of the variety were supplied to four countries. U.S.S.R. was the largest buyer which purchased worth Rs. 71.96 million alone (over 3 million pieces). Italy, Spain and German Democratic Republic were the other buyers.

Next to wet blue chrome goat skin, finished leather was the another important variety active in the export trade. It earned for the firm Rs. 12.65 million worth of foreign exchange. U.S.A. was the leading buyer which bought nearly 0.29 million pieces (Rs. 8.85 million), out of the total quantum of overseas supply of the firm at 0.43 million pieces. U.S.S.R. (Rs. 2.20 million), German Democratic Republic and Singapore were prominent among the firm's other buyers.

Apart from these significant varieties, E.I. tanned goat skins and finished leather products were the other items exported by the firm during April–December 1973. In terms of value, these fetched respectively Rs. 5.88 million (nearly 0.20 million pieces) and Rs. 61,250 (722 pieces).

Destinationwise, the total supplies of the firm (inclusive of all varieties) during April–December, 1973 were : U.S.S.R. Rs. 74.20 million (3.15 million pieces); U.S.A. Rs. 9.12 million (0.31 million pieces); Japan Rs. 1.93 million (48,387 pieces), Italy Rs. 1.61 million (65,364 pieces), German Democratic Republic Rs. 1.60 million (53,313 pieces) and Spain Rs. 1.26 million (64,536 pieces).

One of the well established manufacturers and exporters of leather, the Madras firm entered into the business 25 years ago, achieving significant strides in production as well as exports from year to year. For their export success in 1969-70, the Government of India awarded them the 'Certificate of Merit', a much coveted export award. Taking into consideration the Government Policy to encourage export of finished leather and products made therefrom, they are currently endeavouring to improve export of finished leather and products. They have already drafted a plan for diversifying their range of production and have taken effective steps for expansion in terms of space, machinery and technique. Keeping in view rapidly changing demands of sophisticated buyers abroad, they have procured recently modern machinery for tanning and many other machinery items are still under import pipeline. Presently they are engaged in doubling their current praduction capacity and hope to achieve the estimated production by the end of March 1974. Only recently, they have been declared as Export House by the Government.

The output range of the Madras firm includes a variety of leather, such as, wet blue chrome and E.I. Tanned goat skins, finished leathers of high international standards (calf skins, glazed kids, aniline buff calf, upholstery leather, kid and kip linings and printed calf).

Apart from main manufactures, they are also endeavouring to develop markets for a variety of other finished products, such as, ladies' handbags, wallets, belts, travel accessories, shoes, sandals, textile garments and handicraft items manufactured by others.

As a result of recent release of additional quota, new contracts valued approximately at Rs. 15 million are currently under nogotiation. They have now outstanding contracts at a value of about Rs. 10 million for finished leathers and another order to the tune of Rs. 10 million has just been consummated.

Having all these achievements to their credit, they have recently made headway in setting up a joint venture in the field in Afghanistan. The proposed joint venture in Afghanistan will manufacture all types of semi-tanned and finished leathers and the firm's equity participation in it has been fixed at Rs. 500,000.

With a view to achieve maximum import substitution, they are making all possible efforts to procure all requirements at domestic level. Simultaneously, they are also ensuring that the products compare favourably with the international standards in so far as quality, finish and substance aspects are concerned. These precautions are taken mainly with a view to satisfy the rapidly changing demands of sophisticated consumers abroad. They have already set up a Research and Development Laboratory in their tannery sector which is equipped with sophisticated precision apparatus and qualified technicians. They are also resorting to strict quality control measures to control the quality at each stage of finish. Besides their own technicians, they also take full advantage of research undertaken by various research laboratories and institutions in the line for product development.

WOOLLEN GOODS POPULAR ABROAD

India-manufactured wool and woollen products are rapidly picking overseas demand in recent years. In fact, the consistent uptrend in exports has carved a place of pride for woollen sector in the national economy. For instance, the year 1972-73 witnessed the export growth rate at 34 per cent over the export performance in the preceding year. The export value in the year was as high as Rs. 480 million as compared to Rs. 358 million in 1971-72, Rs. 325.72 million in 1970-71, Rs. 264.76 million in 1969-70, Rs. 266.35 million in 1968-69 and Rs. 264.30 million in 1967-68.

The export range of the industry covers carpets, druggets and numdahs, woollen hosiery, raw wool, blankets, shawls, shoddy wool, wool tops, worsted yarn knitting wool, woollen and mixed fabrics and woollen ready-made garments. USSR, Federal Republic of Germany, USA, UK, Canada, Netherlands, Poland, Czechoslovakia, Libya, Hungary, Kuwait, Sweden, Belgium and Malaysia are the significant markets for these products.

M/s. Shree Digvijaya Woollen Mills Limited, Aerodrome Road, Jamnagar-3, the prominent manufacturers and exporters of woollen textiles are reported to have secured export orders at a value of about Rs. 4.30 million during 1973-74. The orders have mostly come from the United Kingdom and East European markets. In terms of quantity, the exports are estimated to be about 35 per cent of the total production.

The range of woollen goods of the firm, mainly includes all-wool suitings and serge and other varieties in the line. USSR and UK are among their significant customers. Besides these developed countries, a number of developing markets are in the list of buyers of the firm.

The production profile of the company includes woollen and worsted yarn and fabrics like gaberdines, pattern suitings, tropicals, velours, ladies' overcoatings, tweeds, rugs and blankets, shawls and lohis. They are currently engaged in implementing a scheme of modernisation and expansion of their manufacturing plant and machinery. From 1964 to 1973 they have spent over Rs. 13 million on the scheme.

IRON ORE TO EEC COUNTRIES

M/s. Minerals and Metals Trading Corporation of India (MMTC), New Delhi, have achieved a major breakthrough in European Economic Community markets by securing recently a sizeable export order amounting to Rs. 1.5 million tonnes of iron ore. This achievement augurs well from the point of view of India becoming a major supplier of iron ore to the West European markets on long term basis. Earlier, during August 1973, MMTC booked orders for a small quantity of 0.5 million tonnes from the West European markets. The Corporation hopes to export iron ore to these markets at about three million tonnes by 1975.

Apart from strengthening the developed market like Japan, MMTC are endeavouring to develop new markets for iron ore in Western Europe as well as in other countries, such as, Taiwan and South Korea.

Iron ore has a vast export potential and as a major foreign exchange earning item of MMTC, it occupies a significant place among the export products of the Corporation. During 1971-72, the Corporation's total exports of iron ore were of the order of Rs. 720 million. For the year 1973-74, the export value is estimated at Rs. 1350 million. The Corporation have resorted to perspective planning in regard to the item which has been projected upto 1984-85.

MMTC's overall exports registered 20 per cent increase during 1972-73 over their preceding year's export turnover. The exports fetched Rs. 1,040 million as compared to Rs. 870 million in the respective years.

EXPORT PERFORMANCE AND POTENTIAL

INDIAN EXPORTS MAINTAIN RISING TEMPO

India's exports during 1972-73 at Rs. 19,609 million were 22 per cent higher than the level of Rs. 16,082 million in 1971-72. The tempo is being kept up in 1973-74 too. According to the latest figures available, India's exports during the first seven months of the current year (April-October 1973) aggregated to Rs. 12,780 million against Rs. 10,654 million in the corresponding period of the last year indicating a rise of 20 per cent, which is comparable with the progress of exports during 1972-73.

India's imports during April-October 1973 also increased to Rs. 13,096 million, showing a rise of 33 per cent over the previous year's level of Rs. 9798 million. The higher rate of rise in imports has resulted in changing the favourable balance of trade at Rs. 586 million in April-October, 1972 to an adverse balance of Rs. 316 million in the corresponding period of 1973. The rise in the value of imports was evident because of the steep rise in prices of crude petroleum in the world markets.

TRADING WITH AUSTRALIA : NEW OPPORTUNITIES FOR INDIAN GOODS

Australia's new preferential tariff scheme which applies only to developing countries, is a further extension of the Australian Government's decision of July 1973 to reduce all of its tariffs across the board by 25 per cent.

Under this new non-reciprocal preferential tariff scheme, most manufactures, semi-manufactures and substantially processed primary products may be imported from developing countries either duty free or at considerably reduced rates in Australia. Except for a few products, all items covered by the scheme may be imported from developing countries free of quota limitations.

This scheme replaces the former Australian L.D.C. Preference Scheme which was introduced in 1966 and under which India was the major beneficiary. This greatly expanded system of L.D.C. tariff preferences, when taken with the earlier 25 per cent tariff cut, means that duties on a wide range of products have been reduced by between 33-1/3 per cent and 75 per cent of the pre-July 1973 rates, with an average of 50 per cent. In addition, 860 items or about one third of all items on the Australian tariff, may be imported into Australia from India and other developing countries free of duty. Additionally. 325 items are free of duty from any source.

Under the new scheme, developing countries will receive an initial preferential rate of 10 per cent ad valorem below the relevant general tariff rate. For example, if the general rate is 30 per cent ad valorem, the new rate for India and other eligible developing countries is 20 per cent ad valorem. It is learnt that the Australian Government, in its effort to expand further trade opportunities available to developing countries, would be establishing within the Australian Department of Overseas Trade in Canberra, a facility designed to assist India and other developing countries to establish their products in the Australian market. The services which this unit will provide include preparation of marketing information and the processing of trade enquiries from the relevant authorities in the exporting developing countries.

There are possibilities of new products, such as, machine tools, metal and wood working machinery, hand tools, construction and materials handling equipment, cables, steel pipes, builders' hardware, domestic appliances, textile machinery, laboratory equipment, electric motors, welding equipment, medical equipment, furniture, communication equipment, automotive parts, pumps, watches and sporting equipment finding a place in the Australian market.

INDO-U.K. TRADE

With close historical and commonwealth links, Indo-U.K. trade relations have enjoyed a somewhat sheltered position particularly with the tariff preferences existing between the two countries. In the past, India had relied mainly on her export of traditional items, such as, tea, textiles, tobacco, leather, etc. to the U.K., as her largest market. But within the last 26 years, there has been a massive, almost revolutionary change in the economic and social climate in both the countries.

The impact of modern technology has given India the capacity to produce basic industrial materials, such as, steel and the country is now manufacturing and exporting increasing quantities of highly sophisticated items like machine tools, electrical equipment and a wide variety of consumer goods. Also, with the application of modern technology, agricultural output has been raised substantially with the result that India now produces most of her own requirements. But India still stands to benefit from the higher and more sophisticated technological 'know - how' of the U.K. and countinues to import large quantities of machinery and industrial raw materials from this market.

The industrial revolution in India has inevitably brought about a reorientation of overseas trading patterns and the finding out by India of new and larger markets has naturally resulted in the loosening of very close ties between the countries. The U.K., now occupies fourth position (after the U.S.S.R., U.S.A. and Japan) in the list of India's overseas trading partners. While the share of India's exports to the U.K. forms only a negligible portion (1.3 per cent) of U.K.'s global imports, the share of U.K. in Indian imports is somewhat better, forming 7 per cent of India's global imports.

The figures of trade between India and U.K. during the last few years are given below :—

(Value in Rs. million)

	1969-70	1970-71	1971-72	1972-73
Imports into India	1025.9	1267.6	2168.6	2254.8
Exports from India	1650.6	1704.4	1680.8	1725.3
	(+)624.7	(+)436.8	(−)487.8	(−)529.5

In 1971-72, the balance of trade turned against India due to steep rise in imports (about 75 per cent) and her declined exports to U.K. This adverse trend persisted during 1972-73. This trend of rising imports cannot be expected to continue. In fact, during 1972-73, the increase in imports from U.K. was just 4 per cent against 75 per cent during 1971-72.

Traditional items, such as, tea, tobacco, leather, cotton piecegoods, jute manufactures, oil cakes and textile fibres constitute about 70 per cent of India's exports to U.K. Exports of tea declined from Rs. 503 million in 1971-72 to Rs. 394 million in 1972-73, a fall of about 22 per cent in value and 26 per cent in quantity. Tobacco also suffered a decline from Rs. 158 million in 1971-72 to Rs. 123 million in 1972-73, a decline of 22 per cent in value and 16 per cent in quantity. Jute manufactures declined by 30 per cent from Rs. 67 million in 1971-72 to Rs. 47 million. However, oil seed cakes and leather improved—oil seed cakes by 86 per cent (Rs. 37.5 million in 1971-72 and Rs. 69.6 million in 1972-73) and leather by 40 per cent (Rs. 199 million to Rs. 280 million). Cotton piecegoods also showed an improvement of 26 per cent from Rs. 142 million to Rs. 179 million in 1972-73.

Exports of India's non-traditional products were not very significant. However, during 1972-73 exports of engineering products amounted to Rs. 54 million and those of chemical products Rs. 15 million against Rs. 48 million and Rs. 13 million respectively in the previous year. Other significant Indian products exported to UK in 1971-72 and 1972-73 were fish (Rs. 10.7 million and Rs. 22.0 million); fruit and vegetables (Rs. 34.2 million and Rs. 41.8 million); sugar (Rs. 27.3 million and Rs. 27.7 million); wool (Rs. 10.7 million and Rs. 37.3 million); opium crude (Rs. 29.6 million and Rs. 39.7 million); textile yarn (Rs. 48 million and Rs. 45 million); carpets of wool and coir (Rs. 31 million and Rs. 38 million); precious stones (Rs. 25 million and Rs. 47 million); ready made clothing (Rs. 19.3 million and Rs. 29.8 million); footwear (Rs. 16 million and Rs. 11 million) and developed cinema films (Rs. 10.3 million and Rs. 12.1 million).

Indian imports from U.K. consist mainly of machinery, transport equipment, iron and steel manufactures and uncut precious stones. Machinery and transport equipment alone accounted for 46 per cent of India's total imports from U.K. in 1972-73 (Rs. 1038 million against Rs. 910 million in 1971-72); iron and steel imports were 23 per cent (Rs. 522 million and Rs. 635 million); precious stones (Rs. 202 million and Rs. 102 million); non-ferrous metals (Rs. 95 million and Rs. 88 million).

The sharp increase in U.K.'s exports to India in 1971-72 and 1972-73 was due to heavy imports of steel by India. This pattern of trade needs to be diversified in the interest of expansion of Indo-U.K. trade. In fact, there is scope for such diversification in the light of assessed possibilites in certain identified Indian products in the U.K. market such as autombile accessories and components, bicycles parts and components, electric components, engine valves, alloy iron, machine tools, forgings, castings, small tools, handtools and cutting tools, electric lamp fitttings and components, sewing machines, electric motors and transformers, builders' hardware including sanitary fittings, welding electrodes, stainless steel cutlery, leather garments and leather sports goods, plastic moulds for electrical industries and industrial fasteners.

With the termination of the Indo-U.K. Trade Agreement 1939, no bilateral agreement now exists between the two countries. There is thus no institutional machinery for holding periodic consultation between the two Governments to consider ways and means for expansion of Indo-UK trade and economic relations. With British entry into the EEC, the harmonisation of the British customs tariffs with that of the community has begun from Ist January 1974. Since Indo-U.K. Trade Agreement of 1939 has been terminated, India would no longer be the receipient of commonwealth preferences. This is bound to create some problems for exports of some of Indian products such as jute and coir manufactures and tobacco.

However, this should not be construed as complete phasing out of Indo-U.K. trade relations. On the contrary, the reverse could well be the case as the expansion of India's export potential, particularly in the non-traditional field, could be complementary to rather than in competition with the U.K.'s own economic development. This is particularly the case in items where production is labour intensive e.g. in the light engineering group, where by importing these comparatively cheap goods from India, the U.K. would be better able to concentrate on selling her more sophisticated items in third countries.

There is enormous potential for Indian exporters in the U.K. market. There is no reason why India should not be able to increase her exports to the U.K. in the future.

ENCOURAGING EXPORT TREND IN DIAMONDS

Diamond continues to be one of the foreign exchange earning items. India's exports of diamonds aggregated to nearly Rs. 297 million during 1973-74 (April-August 1973) as compared to Rs. 217 million in the corresponding period of the preceding year (April-August 1972), recording nearly 37 per cent increase.

India's total export of cut and polished diamonds amounted to Rs. 601 million during 1972-73 as compared to Rs. 362 million in 1971-72.

The major destinations during 1972-73 were Belgium, U.S.A., Hong Kong, Japan, Netherlands, U.K., Singapore and France.

India's export of cut and polished diamonds to U.K. rose from Rs. 14.7 million in 1971-72 to Rs. 33.9 million in 1972-73. Similarly Indian exports of cut and polished diamonds to Belgium recorded growth from Rs. 101.3 million in 1971-72 to Rs. 145.6 million in 1972-73.

In diamonds trade, Belgium is one of the important manufacturing and marketing centres of the world for rough as well as cut and polished diamonds. Similarly, U.K. continues to be one of the major marketing and distribution centres for rough, cut and polished diamonds. The Diamond Trading Co. Ltd., which controls marketing of 85 per cent of world trade in rough diamonds, functions from London.

India, at present, specialises in cutting and polishing small sized diamonds. To maintain the tempo of rising exports, there is scope to diversify its production pattern by adopting advanced techniques and utilisation of modern tools and equipment.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

POLYETHYLENE PRODUCTION UP

Although a recent entrant in the range of non-traditional products developed by India in the post-independence period, polyethylene as an important plastic raw material has come to occupy a significant place. The production of both the varieties of polyethylene—high and low density–has improved sizeably over the years. For instance, the production which was of the order of 17,590 tonnes in 1967 improved sharply to 49,000 tonnes in 1972.

Of the total production during 1972, high density polyethylene accounted for 21,000 tonnes as against 7,840 tonnes in 1967 while the share of low density variety was of the order of nearly 28,000 tonnes as compared to 9,750 tonnes (1967). The total installed capacity in the line during 1972 was rated at 60,000 tonnes.

Currently, there are three units in the line - one engaged in the manufacture of H.D. polyethylene and two producing L.D. polyethylene. All the three units have access to foreign collaboration from countries like USA and UK. The industry, though categorised as a non-priority one, is open for further licensing and foreign collaboration is considered on merits. Import of low density polyethylene is allowed on restricted basis through the State Trading Corporation of India. Such import is, however, banned in case of high density polyethylene.

M/s. Polyolefins Industries Ltd. of Bombay who are engaged in the manufacture of high density polyethylene have achieved creditable success in terms of import substitution. The indigenous content for this item is, in fact, as high as 98 per cent. Ethyl chloride, ethylene, and esso process oil required as raw materials for production of the item are available indigenously. One of the raw materials, namely H-butene, has, however to be procured through import.

Of the raw materials required for manufacture of low density polytehylene, naptha feed stock or ethyl alcohol is available within the country. Raw materials imported for this type of polyethylene include catalysts and chemicals as well as heating media.

With increasing production, the import bill for polyethylene has also been curtailed. The import of high density polyethylene is currently banned. But even earlier in 1971-72 (upto December 71), the imports amounted to only Rs. 1.49 million as compared to Rs. 15.7 million in 1967-68. In the same year (1971-72), imports of low density polyethylene slided down to a mere Rs. 2.58 million as against Rs. 15.25 million in 1967-68. In addition to saving foreign exchange by way of reduced imports, the industry has also started exporting limited quantities of the product. Such exports amounted to about Rs. 1.60 million in 1971-72.

PROGRESS IN CHEMICAL MANUFACTURES

Among the various sectors of Indian economy which registered significant strides in production as well as in exports in the post-independence period, the area of chemicals figures prominently. In fact, in a wide range of non-traditional products for which a sound production base has been established in the country, chemical items occupy prominent place next only to engineering goods. Of a large number of units which are consistently contributing to the growth of the industry, M/s. Tata Chemicals Limited, Bombay have a record of growing production turnover year after year. The firm's soda ash and other basic chemicals are, in fact, feeding a large number of industrial plants, engaged in different lines of manufacture.

During 1972-73, the firm achieved notable strides in the production of a variety of chemicals as compared to their production in the preceding year. For instance, during the year under review, their gross production of soda ash increased to nearly 245,000 tonnes as compared to about 239,600 tonnes in 1971-72. The production of dense soda ash at 95,600 tonnes registered an increase of 24 per cent during the year. Their salt production at 723,500 tonnes in the year was the highest ever. Apart from these basic chemicals, their production range covers other chemicals, such as, sodium bicarbonate, benzene hexachloride, copper oxychloride, electrolytic caustic soda and many other chemicals.

The firm is presently engaged in expanding production of soda ash to 360,000 tonnes per annum and has plans to step it up further. Of the total annual production of soda ash, about 95 per cent is consumed by the home market, mainly by industrial units and the rest is purchased by cooperative societies. With a view to cope with growing domestic demand, the firm has taken urgent steps to increase the production by 25 per cent. Apart from soda ash, the firm's other chemicals, such as, benzene hexachloride and copper oxychloride are in growing demand in the country.

With 4 units in the line, the production of soda ash industry in the organised sector was of the order of 485,970 tonnes valued at about Rs. 316 million in 1972 as compared to 478,940 tonnes valued Rs. 239.70 million in 1971. The installed capacity in the two years was 500,000 tonnes and 470,800 tonnes. respectively.

WELDING ELECTRODE INDUSTRY
A REVIEW

Welding electrode industry enjoys the 'priority' status in India. There are 19 units in the organized sector engaged in the production of welding electrodes with a total installed capacity of 682 million running metres. Capacity for another 27 million running metres has already been approved and it is expected that during 1973-74 the total capacity to be materialized would be of the order of 709 million running metres. Estimated demand for the item during 1973-74 has been placed at 400 million running metres in the country.

Production of welding electrodes has been steadily rising over the last few years. In 1972, the production was 391 million running metres (m.r.m.) as compared to 329 m.r.m. in 1971. During the first seven months of 1973 (January-July), the production was of the order of 209 m.r.m. The target of production at the end of Fifth Five Year Plan (1974-79) has been placed at 550 m.r.m. The production range includes sophisticated types of electrodes besides the general purpose ones.

The industry has marched well on the export front also. It exported electrodes worth Rs. 4.57 million in 1972-73 as against Rs. 3.2 million in 1971-72. The export quantum was 2,511 tonnes and 1,716 tonnes respectively in the two comparative years. In 1972-73, Arab Republic of Egypt was the best market for this item with purchases worth about Rs. 2.05 million. Kenya was the second best buyer with an intake worth Rs. 0.38 million followed by Burma at Rs. 0.35 million. Yemen Arab Republic, Saudi Arabia, Sri Lanka, Uganda and

Dubai were the other prominent export destinations during the year. In all, welding electrodes made in India are exported to more than thirty countries. The export value during the first five months of 1973 amounted to Rs. 0.95 million (596 tonnes).

The Government of India has adopted a liberal licensing policy for the industry. Foreign collaboration is, however, allowed only for special types of electrodes. Import is limited to only such electrodes as are not produced indigenously.

INDIAN EXPERTS FOR FERTILIZER PLANTS IN IRAQ

Indian experts are to help in the designing and fabrication of fertilizer plants in Iraq under a technical assistance agreement concluded recently between the Fertilizer Corporation of India, a public sector organisation and the state organisation of Industrial Design and Construction of Iraq. The agreement is a part of the overall Indo-Iraq Technical Aid Agreement.

Initially, the Fertilizer Corporation of India (FCI), will depute four experts to Iraq. This is the first agreement to be signed by the FCI with any foreign government for giving technical assistance. The experts will advise the Government of Iraq on technical matters including designing, construction and fabrication of fertiliser plants. Currently, two plants are under construction in Iraq with foreign collaboration. It is reported that Iraq is also interested in getting Indian expertise on a long term basis for running the new plants.

PROCESSED FRUITS AND VEGETABLES

India produces a wide range of fruits and vegetables both tropical and temperate. The annual production of fruits and vegetables in the country is approximately 20 million tonnes. Increasing attention has been paid by the Government of India in recent years to the processing industry with the dual objective of providing a supplement to the food resources of the country and to exploit the great export potential in foreign countries. A target of 150,000 tonnes for the manufacture of processed fruits and vegetables by 1973-74 has been estimated by the Government.

Export of processed fruits and vegetables has been steadily increasing during the last few years. The following targets for exports of different categories of processed fruits and vegetables have been estimated :

	1973-74		1978-79	
	Qty (tonnes)	Value (Rs. million)	Qty (tonnes)	Value (Rs. million)
Canned and bottled fruits	14,000	28	24,500	49
Vegetables	500	1.25	800	2
Dehydrated onions	700	3.5	1130	5.65
Pickles and chutneys	6000	17.8	9660	29

There are at present 21 units engaged in the manufacture of processed fruits and vegetables in the organised sector. In addition to these, 17 units have been approved by the Government for the manufacture of different categories of processed fruits and vegetables. Besides these, there are 900 units engaged in the manufacture of processed fruits and vegetables in the small scale sector. The combined production of all the units engaged in fruits and vegetable preservation in the organised sector during 1973 was of the order of 50,000 tonnes.

MANUFACTURE OF WOODEN TOYS

The existence of wide, varied forest species in India (estimated area under forests 15,000,000 hectares) and the availability of local craftsmen and artisans, who have centuries of tradition behind them in the art of wood-work, are factors that could be taken advantage of for the manufacture of quality toys both for domestic and export markets.

The current turnover of wooden toys has been estimated at Rs. 0.9 million. According to a survey made on "India's Export Potential of Toys and Decorations" the annual domestic demand for wooden toys is expected to go as high as Rs. 5 million by the end of the Fifth Plan.

The survey report has indicated that the demand for wooden toys the world over is maintaining an average annual growth rate of 10 per cent. The annual import of wooden toys in U.S.A., U.K., France and Germany has been placed at Rs. 142.16 million. With the backing of local departmental stores, buyers and manufacturers from these countries, there is also a big scope for setting up of export oriented units. In fact, there is an estimated immediate export potential of Rs. 1 million to Europe and U.S.A. The survey report has, therefore, recommended the establishment of new units and expansion of existing units to cater to both internal and export demand.

The industry today is mainly cottage and is scattered mostly in Mysore, Tamil Nadu, Kerala and Kashmir. Exports have been nominal, though there are signs that it might pick up fast in the near future. Local designs are abundant and the operations involved in the manufacture are very simple.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

RED OXIDE PRIMER

Red lead in linseed oil vehicle has always been regarded as a most reliable inhibitor primer for iron and steel structures when preparation and pre-treatment of steel surface is not of high order. The percentage of red lead commonly used is 50-60 per cent and this is imported and further it is heavy to apply and dries rather slowly. Detailed investigations have been carried out to reduce the red lead content and improve the drying characteristics of the primer. These investigations show that it is possible to obtain good protective primer with as low as 13 per cent red lead, and a better drying characteristic. The performance of this primer was evaluated in the laboratory accelerated tests and at field stations at Mangalore, Madras and Mandapam Camp. The results showed that red lead-red oxide (13 per cent) primer can be used economically for 2 years on both hand-cleaned and pickled surfaces.

Primers are coating materials applied as the first coat to an unpainted surface. Red lead-red oxide primer finds application for the protection of all steel structures, viz. bridges, towers, tanks, rail coaches exposed to the atmosphere, and is preferred for industrial atmospheres. The process developed has been studied on a laboratory scale. The product obtained conforms to IS 102. Excepting red lead, the raw material needed in the process, viz. red oxide, double boiled linseed oil, white spirit and drier are available indigenously.

EXTRACTION OF STRYCHNINE AND BRUCINE FROM NUX VOMICA SEEDS

National Research Development Corporation of India offers technical know-how for an improved and cheaper process for the manufacture of strychnine and brucine which are alkaloids of pharmaceutical importance. Strychnine and strychnine sulphate are used as rodentioide and brucine and its salts are useful for denaturing alcohol and as analytical reagents for separating optical isomers.

Strychnine and brucine are contained in plant material particularly seeds and bark of nux vomica - a strychnes species tree. The existing methods for the extraction and separation of strychnine and brucine in their purest form are rather costly.

The new process developed by Regional Research Laboratory, Bhubaneswar, eliminates the drawbacks of the conventional methods and reduces the cost of production too.

According to the process developed, the nux vomica seeds are ground to required size, treated with alkali and extracted with a solvent in two stages over a period of time. The extract is concentrated and treated with acid to precipitate strychnine sulphate which is separated, recrystallised and treated with alkali to yield pure strychnine. Brucine sulphate present in the filtrate is basified and separated to yield crude brucine which is finally purified.

Strychnine and Brucine prepared by this process conform to the following standards :—

Strychnine Sulphate	NF-XI
Strychnine	NF-X
Brucine Sulphate	NF-IX
Brucine	Standard not available

The raw materials/chemicals used in this process, viz., nux vomica seeds, benzene, sodium hydroxide, sulphuric acid, and charcoal, are all available indigenously. Similarly all machinery and components for the plant are indigenously available.

PIGMEMT GRADE IRON OXIDE

Pigment grade red oxide of iron is at present being produced in the country. In this process of production of red oxide of iron, sodium sulphate, which is extensively used in the paper and detergent industries is also obtained as a bye-product.

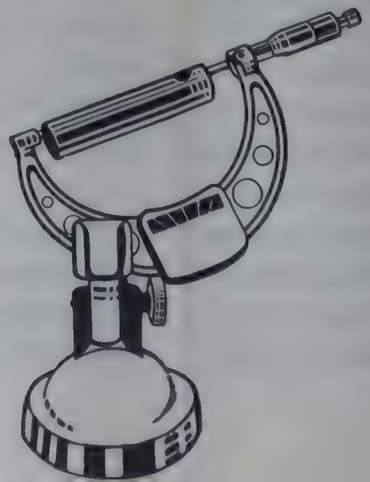
The process, which has been developed by the Regional Research Laboratory, Bhubaneswar is quite simple and consists in reacting ferrous sulphate hepta hydrate with sodium carbonate at a moderate temperature. The roasted mass is treated with water whereby sodium sulphate dissolves leaving iron oxide as the residue. The solution is decanted and iron oxide is successively washed to make it free from sodium sulphate and then dried. Sodium sulphate is recovered by evaporation and crystallisation. The red oxide of iron obtained in this process conforms to Indian Standard specification No. 15:45-1950, 15:5-1955 and 445, 446, 447, and 473 and 15:255-1567. The only chemical used in the process, besides the waste from steel plants, is commercial sodium carbonate which is available indigenously.

STEAM TURBINE GENERATOR SET

A 1,20,000 kilowatt steam turbine generator set, supplied by the Bharat Heavy Electricals factory at Bhopal, has been successfully commissioned at the Chandrapura Thermal Power Station under Damodar Valley Corporation in Bihar. The entire erection and commissioning work has been done by the Indian engineers, technicians and workers of the Bhopal factory.

This is the second 1,20,000 kilowatt set supplied by Bhopal factory which has been commissioned within the last five months to help augment power supply in the eastern region of the country. The earlier set was commissioned at Santaldih in West Bengal in October last.

With the commissioning of the set, the total installed capacity of the system would be raised to 10,61,000 kilowatts. Out of this, 95,000 kilowatts of power would be supplied to the Calcutta metropolitan city and 65,000 kilowatts to the Bokaro Steel Plant. The Bhopal factory is also supplying one more thermal set of 1,20,000 kilowatts capacity for this Power Station which is under erection at site.



COMPOSITION OF INDIA'S EXPORT TRADE

(In Million Rupees)

Export Product	1973-74 (April–July)	1972-73 (April–July)	1972-73
Fish and Fish Preparations	259.15	190.20	537.95
Meat and Meat Preparations	17.85	5.15	34.70
Cereal and Cereal Preparations	11.60	222.25	769.90
Fruits and Vegetables	**282.25**	**290.00**	**811.55**
(a) Fresh Fruits and Nuts	261.30	268.70	727.10
(b) Fruits Preserved and Fruit Preparations	2.60	8.60	29.45
(c) Vegetables	12.95	6.95	52.35
Sugar and Preparations and Honey	37.90	82.00	139.15
Coffee	159.00	91.00	329.30
Tea and Mate	333.00	395.65	1472.95
Spices	113.35	85.15	291.30
Feeding Stuff for Animals	510.90	171.65	790.70
Unmanufactured Tobacco	381.60	313.70	610.70
Tobacco Manufactures	9.72	11.00	28.00
Textile Fibre and Waste	102.10	115.85	379.80
Metalliferrous Ores and Metal Scraps	452.95	306.90	1259.70
Petroleum and Petroleum Products	24.80	35.60	288.00
Fixed Vegetable Oils and Fats	108.15	19.60	246.25
Oil seeds, Oil Nuts and Kernels	41.40	28.95	67.95
Chemical Elements and Compounds	**22.85**	**28.00**	**76.45**
(a) Organic Chemicals	3.65	11.00	28.30
(b) Inorganic Chemicals	19.20	17.00	48.15
(c) Dyeing, Tanning and Colouring Materials	23.60	24.00	92.65
(d) Essential Oils and Perfume Materials	30.35	29.35	100.15
(e) Medicinal and Pharmaceutical Products	26.00	21.20	103.20
Leather and Leather Manufactures (Excluding footwear)	697.30	473.88	1745.10
Paper and Paper Manufactures	15.40	11.10	41.60
Textile Yarn, Fabrics and Related Products	**1509.45**	**1460.60**	**4570.55**
(a) Jute Manufactures (Excluding twist and yarn)	822.25	937.35	2472.00
(b) Cotton Manufactures (Excluding yarn and thread)	461.55	304.20	1267.10
(c) Textile Yarn and Thread	67.75	102.00	371.00
(d) Floor Coverings and Tapestries (other than cotton and jute)	91.20	73.40	267.00
(e) Woven Textile Fabrics	61.10	39.10	155.75
Pearls, Precious and Semi-Precious Stones	162.75	211.60	779.30
Glass and Glassware	10.30	6.00	27.90
Iron and Steel	169.70	142.90	417.55
Non-Ferrrous Metals	26.35	24.75	83.35
Machinery other than Electric	100.45	77.00	293.60
Electrical Machinery, Apparatus and Appliances	70.10	70.25	234.30
Transport Equipment	**82.30**	**65.50**	**315.25**
(a) Railway Vehicles	17.20	8.25	39.60
(b) Road Moter Vehicles	30.35	29.10	159.90
(c) Road Vehicles other than Motor Vehicles	34.45	27.00	104.70
Clothing	152.00	195.00	560.15
Footwear	31.10	34.20	128.60
Scientific, Medical, Optical, Measuring and Controlling Instruments and Apparatus	4.15	6.85	33.25
Developed Cinematographic Films	6.85	18.00	54.00
Total including other items (excluding re-exports)	**6593.15**	**5861.20**	**19544.50**

Source : Director General of Commercial Intelligence and Statistics, Calcutta.

RESEARCH AND DEVELOPMENT IN AERONAUTICS

The National Aeronautical Laboratory is one of a series of national laboratories charged with the responsibility of providing the R & D back-up for India's growth and self-reliance in the aerospace field. Started in 1960 in temporary premises in Bangalore, with a budget of less than Rs. 0.3 million, to-day the Laboratory has grown to a full fledged institution spread over two sites in Kodihalli and Belur with an annual budget of over Rs. 16 million. The Laboratory has a strength of over 1000 scientific and supporting personnel. With the emphasis on self-reliance to be obtained in aeronautics in the shortest and by the most economic means possible, NAL looks forward to a substantial increase in the tempo of activities during the course of this decade.

The Laboratory has made rapid strides in its early establishment and creation of basic aerospace facilities. The 4-ft. Trisonic Wind Tunnel, which has been designed after a careful study of various optimum configurations and desired capability, and fabricated according to these specifications, started functioning from 1968. The tunnel is a national facility shared by the Hindustan Aeronautics Limited, Defence R & D Organisations and the Indian Space Research Organisation and is capable of about 1000 tests per year on an average each of which would cost at least Rs. 5000. Considerable expertise has been gained in the design of various advanced systems and components with which NAL is able to serve the industry. The earnings from fees and pilot plant proceeds amounted to Rs. 4 million in 1972-73.

The 4-ft. trisonic wind tunnel, set up at a cost of Rs. 40 million is being operated as a national facility for conducting tests and evaluation of models of aircraft, parts, stores, and space launch vehicles for the Defence R & D Organisation, the Hindustan Aeronautics Limited, the Indian Space Research Organisation and the National Aeronautical Laboratory. On an average about 800 test runs are carried out each year subject to availability of power. NAL has built special facilities for precision model making, their inspection and in testing in the 4-ft. tunnel. Each model costs 0.1 to 0.2 million rupees to fabricate. The Laboratory has gained adequate experience in the fabrication of sophisticated instruments for aerodynamics investigations including 6-component straingauge balances.

A number of other tunnels including a 1-ft. trisonic wind tunnel, a shock tube where effects due to shock waves and kinetic heating can be investigated, a low speed tunnel, etc. have also been designed, fabricated and installed. A 5-ft. x 1-ft. boundary layer tunnel is under construction.

One of the important contemporary areas of research in aerodynamics on hand at NAL pertains to supercritical - shockfree - transonic aerofoils, with the object of acquiring competence in the analytical, computational and experimental methods for the design and development of shockfree aerofoils for high speed aircraft to be made indigenously. The studies are expected to enable improved perfomance of such aircraft with indigenious expertise. Considerable work has been carried out relating to the evaluation of transonic wave drag of the existing aircraft configuration, modifications to area distribution for drag minimisation, wing section shape modifications to delay shock formation or approaching supercritical performance, planform modifications - e.g. sweep angle, root extentions, wing warp, body indenting and tip shaping etc. These studies are coordinated with wind tunnel test programmes. A fair degree of success has been achieved in fabricating supercritical aerofoils of the type used by NAE, Canada and elsewhere and the tests confirmed by schlieren flow and shadograph visualisation in the wind tunnel. The experiments also included investigations of the tunnel wall interference to take them into account.

The Laboratory has designed and fabricated a Turbine Research Rig for the study of experimental turbines upto 1650 h.p. power absorption at 26,000 r.p.m. Modern turbomachines with operational speeds as high as 50,000 r.p.m. pose a challenge to design engineers of mechanical components and bearings. The feasibility of using air lubricated bearings as a solution is under study. Studies aimed at optimum combustion are on hand with an after burner commissioned in the laboratory. Some of the experiments have led to the demonstration of new ignition techniques and temperature measurements of hot gases in motion.

A subsonic cascade tunnel has been set up for study of turbine blade profiles and a transonic cascade tunnel is under construction. Facilities have been set up for the machining and inspection of turbine blades for experimental work.

The work in this division is of particular interest to the electrical industry.

Contribution of NAL in the field of Materials Science includes development of fibre plastic composite materials, evaluation of high temperature metals and alloys, special fabrication techniques such as spark erosion and electrochemical milling, fatigue and creep investigation and failure analysis aimed at prevention of failure of aerospace components. Work is also in progress on stress corrosion. Some of these studies are of interest to many other industries as illustrated below :

Fibreglass reinforced plastics technology and fibre wound reinforced plastics technology offer a variety of products which combine light weight and high strength, resistance to corrosion and high insulating properties to meet specialisad needs of aerospace, transport, chemical, electrical, electronics, marine and agricultural fields. The Laboratory bas carried out pioneering work in this field on scientific lines, using filament winding machines, fabricated also at the Laboratory pressure matched dies, vacuum and other types of moulds, backed by rigorous quality testing and control. FRP technology is ideally suited to India : it is labour intensive; it can substitute metals including steel which are in short supply; it is technology-based and offers scope for self-employment; tooling and equipment are simple and inexpensive; traditional craftsmanship is available in the country and the materials like fibreglass, plastics and epoxies are available indigenously.

Already goods worth Rs. 1.5 to Rs. 2 million have been made in the Laboratory for user organisations like Defence, Bharat Electronics Limited, India Meteorological Department, Karnataka State Electricity Board, etc. These include antennas, radar dishes, 20-ft. radomes, 30-ft. and 52-ft. aerials masts, piston rings, doubly curved reflectors, insulating plates, rain gauge consoles, coil formers, locking springs, rings, rain gauge consoles, circuit breakers, rods, supports, plates, etc. Special techniques of honeycomb-sandwitch construction have been developed for radar shelters which are required by Defence. The development and fabrication of a large 55-ft. radome for Defence at a cost of Rs. 0.45 million is on hand.

The Bharat Electronics Limited are being assisted to set up production worth about Rs. 10 million per year of FRP products for which NAL is supplying a large filament winding machine and training technical personnel.

Chromium, because of its high strength, heat resistance and non-corrosive properties, forms an important constituent for high temperature alloys such as are used in turbine blades etc. The annual demand for chromium used by the ferrous casting industry alone is estimated at 35 tonnes of super purity chromium. India is the third largest producer (17 per cent) of chromite ore in the world and the production in 1971 was of the order of 15,000 tonnes, most of which was from Karnataka State. It is possible to use larger quantities of chromium in place of nickel in partial substitution of nickel subject to certain limitations such as nitrogen embrittlement. Even this defect can be overcome by using scavenging elements to prevent the diffusion of nitrogen into the interstitials and controlling the purity of chromium by suitable techniques. Hence the market for chromium is likely to expand in the near future. NAL has developed the technology for producing electrolytic chromium of purity better than 99.995 per cent (based on metals) on a Laboratory scale and optimum conditions have been standardised.

Titanium is the fourth most abundant metallic element in the earth's crust and has strength properties superior to steel. Because of its unique mechanical, electrical and thermal properties, it found ready use in jet engines, compressor parts and airframes. Its price compares favourably to that of other vacuum melted metals and the metal is increasingly used in the chemical industry for valves, pumps, heat transfer units and liners besides in the electronic industry (because of its gas absorbing property and co-efficient of expansion similar to ceramics), missiles and aircraft manufacture.

The National Aeronautical Laboratory has taken up a metals and alloy development programme aimed at development of aluminium and titanium alloys and their evaluation for aerospace applications.

Structural parts from titanium alloys can be produced economically and with better mechanical properties through powder metallurgy. For this, high quality titanium powder with reproducible properties, free from impurities is needed. A novel set-up, viz. an electron beam splatting furnace, has been designed and set up, where sponge titanium is melted under an electron beam and the molten drops are splatted into fine flakes. These flakes can then be consolidated and subsequently formed or sintered for obtaining desired shapes and products. The equipment is capable of producing high quality titanium powder and can be used continuously for a pilot plant. The equipment is the first of its kind to be made in the country.

Aircraft materials and parts are subject to failure due to fatigue and creep and their interactions. An important area of work in NAL has therefore been concerned with the study of fatigue and a wide range of fatigue testing machines including a rotating cantilever machine, electrohydraulic machine, and a random noise fatigue testing machine has been fabricated. Based on this expertise, full scale fatigue testing facilities have been set up and investigations have been carried out on one of the aircrafts used by Defence. The investigation if carried out elsewhere would require components worth about Rs. 2.0 to Rs. 2.5 million.

In the field of materials processing, specialised equipment have been developed. Mention has been made earlier about the filament winding machine for FRP products and an electron beam splatting machine. A spark erosion machine (or Electrical Discharge Machine) with precision controls and maximum cutting power of 2.5 KW for machining accurate and complex shapes has been developed and the industry is being assisted to produce these on a commercial scale. Another technique being applied to produce accurate shapes without time consuming mechanical process is the elecrochemical milling technique. As an example, it is possible to produce nozzle rings used in diesel electric locomotive superchargers more efficiently by this technique, saving foreign excnange.

A 1000-ton press has been fabricated as a first step in the application of high pressure technology for fabrication of super hard materials and products. It is capable of generating pressure of 750,000 psi operating from 120° C to 1500° C.

The Laboratory has carried out a number of studies on vibration analysis of missile wing and helicopter blades and has taken up aero-elastic and flutter studies for the satellite Launch Vehicle SLV-3 for the Indian Space Research Organisation,. Vibration and stress analysis of composite structures, photo-elastic investigations of complex shapes and structures, and crack propagation studies to understand the mechanism and adoption of preventive techniques against structural failures have been carried out.

The Laboratory has developed a number of sophisticated devices and instruments such as transducers and instruments for pressure, temperature, displacement and differentials, strain gauges, electro-hydraulic control systems for fatigue testing and wind tunnel studies. A recent addition to the activities is the setting up of motion base simulators for studies of aircraft pilot behaviour. The laborotory supplies specially designed instruments and transducers to user organisations and goods worth over Rs. 1.2 million have been supplied so far from the transducer pilot plant. Technology for transducers, strain indicators, thermocouple amplifiers, strain measuring bridge, strain gauges, vibration meter etc. has also been released to industry.

A number of digital instruments and devices, power control circuits, etc. have been developed and supplied to the Laboratory divisions and outside users. Among the systems developed and supplied to user Department is a 500-channel data system for the SERC and a radio reporting rain gauge system for the Meteorological Department. So far goods worth over Rs. 1.5 million have been sold from the pilot plant.

An expert group concerned with mathematical techniques and computer applications has been set up. Besides assisting the various Divisions in computer aided design and optimisation, this group is spearheading a project for the setting up of a Regional Computer Centre in Bangalore which will involve around it activities of an engineering design centre for the public and private industries and technological institutions in the region. ☐

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MACHINE TOOLS ON EXPORT STREAM

M/s. Mysore Kirloskars Limited, Harihar-Harpanahalli Road, Yantrapur, (P.O.), Mysore (Karnataka), one of the undertakings engaged in manufacture of machine tools improved its export turnover to Rs. 2.4 million during the year ended June 1973 from Rs. 1.7 million in the preceding year. The machine tools manufactured by the firm are sought by a growing number of countries abroad.

Set up way back in 1941, the company is today well established as a leading manufacturer and exporter of machine tools in the private sector. It is progressively expanding its production as well as range of output. Its main line of manufacture is grade one machine tools like centre lathes, geared head lathes, pillar drilling machines, hacksaw machines, power presses, capstan and turret lathes and foundry products. The firm has entered into technical collaboration with a number of foreign firms of repute in the line.

India's exports of machine tools during 1972-73 earned foreign exchange at a value of Rs. 21.50 million according to an estimate of the Engineering Export Promotion Council, Calcutta. In fact, the exports during the preceding year (1971-72) were even higher at Rs. 30 million. The exports rose to this level from only Rs. 7.5 million in 1965-66. Indian machine tools are already popular in several countries including U.S.A., Canada, Australia, New Zealand and European countries.

The production profile of the industry covers a wide range of sophisticated machine tools which caters to the requirements of both, home and overseas markets. The product range includes latest type of machine tools, such as, drum type turrets, single spindle and multi spindle automatics, high precision multi-tool lathes, broaching machines, drilling machines with quick setting arrangements, higher capacity plastic working machines, diversified types of heat treatment and melting furnaces and a comprehensive range of conventional tools.

During 1972, in the organised sector, there were 76 units engaged in manufacture of machine tools with an installed capacity of Rs. 750 million. Actual production during the year was estimated at 9670 numbers valued at Rs. 342.60 million.

Import substitution and import saving have assumed foremost importance in this field. The percentage of imports to total consumption in the machine tool sector has also reduced substantially over the last few years.

INDIAN BIRDS AND ANIMALS TO WORLD MARKETS

Birds and live animals have carved out a place for themselves in India's varied exports to overseas countries. The value of these exports improved to about Rs. 13.40 million in 1972-73 as compared to Rs. 11 million in 1971-72. During April-August, 1973, exports were of the order of Rs. 4.13 million.

Of the total export value in 1972-73, birds alone accounted for nearly Rs. 8 million. Japan whose purchases of Indian birds during the year amounted to Rs. 2.85 million was the best customer. Italy with an import worth Rs. 1.13 million was the second best buyer, followed by U.K. at Rs. 0.72 million, German Federal Republic Rs. 0.65 million, France Rs. 0.61 million and Netherlands Rs. 0.54 million. Lebanon, Belgium and Denmark were the other important destinations.

In the range live animals, monkeys were the best foreign exchange earners. These earned Rs. 3.52 million in foreign exchange and were supplied mainly to U.S.A., (Rs. 2.39 million). Sheep and lambs constituted another important category, fetching about Rs. 905,000. The supplies of these animals was directed mainly to Dubai and Kuwait. Live poultry, goats and kids, elephants, dogs, cats, turtles and zoo animals were the other animals exported during the year.

Contributing to the export effort in this field, M/s. India Zoologicals (4926, Kucha Rehman, Chandni Chowk, Delhi-6) who are exporters, breeders and dealers in pet and wild birds, have recently bagged orders for 9 baby elephants from Japan and Germany. Total orders on hand with the firm are around Rs. 553,000. Their total exports to-date amounted to Rs. 634,149. Of this, the foreign exchange earning for the period April 1973 to January 1974 alone, was around Rs. 397,000. This represents a three-fold increase over the exports of the firm amounting to only

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Rs. 170,000 during the preceding nine months from July 1972 to March 1973. Considering this improvement, the Delhi firm is expected to make sizeable headway in the export field in future.

The birds and animals exported by the firm include finches, buntings, ducks, cranes, storks, greater hill and other mynas, alaxandrien, rose ringed, mustach and blossom headed parrots, hill birds, horn bills, flamingo, baby elephants, Himalayan black bear cubs, hyna, camel baby and Tibetan lasa apso (pup).

GLOBAL TENDER FOR CABLES WON

Against stiff international competition, a sizeable order to the tune of Rs. 3.78 million was won by M/s. Indian Cable Company Limited (INCAB), 9, Hare Street, Calcutta, from Hong Kong for supply of paper insulated aluminium conductor power cables and associated accessories. As per the agreement, the Indian firm is to supply 61.35 kilometres of the cables to its counterpart in Hong Kong—M/s. Electric Company Limited. The firm has already completed production against the order, a part of which has already been executed. The rest of the supply against this order is also expected to be shipped shortly. This is claimed to be the first major contract of its kind secured by an Indian firm from Hong Kong.

INCAB's export turnover during 1972-73 was of the order of Rs. 16.60 million. The firm entered into export business way back in 1967 and up to March 1973 its total foreign exchange earning was of the order of over Rs. 60 million. The firm's cables and accessories are popular in a number of markets abroad. In the West Asian markets, such as, Kuwait, Abu Dhabi, Jordan, Sudan and Mauritius these are particularly sought after in growing volume.

A variety of cables are being manufactured by the firm currently. These include PVC power cables, PVC insulated self - bearing cables, PILC cables for power transmission and distribution, heat-resisting PVC power cables (in the range from 1.5 mm^2 to 1600^2 mm^2 upto 1.1 KV grade). It is to the credit of the firm to have manufactured PVC insulated self bearing cables for the first time in the country which helped to save sizeable amount of foreign exchange. The firm supplied these cables to M/s. Hindustan Copper Corporation, Khetri which used to import these cables from France. Apart from this achievement in import substitution, the firm has developed some new varieties of cables, such as, airport lighting cables, radar cables, multi-core data transmission cables and precipitator cables. Besides exporting cables to markets abroad, the firm is also supplying a wide variety of cables to domestic firms and state electricity boards.

India's cables and wires industry which occupies a significant place in the engineering sector, has earned foreign exchange in growing volume from year to year. For instance, the exports which were of the order of Rs. 16.77 million in 1967-68 rose sharply to Rs. 126 million in 1972-73, according to the Engineering Export Promotion Council, Calcutta.

CHEMICALS EARN MORE FOREIGN EXCHANGE

India's chemical sector has to its credit development of new chemical products every year. A wide variety of Indian chemicals find their way to most developed economies overseas, such as, U.S.A., U.K., U.S.S.R. and Australia because of their fine quality. India is perhaps the only country amongst the developing nations which has built up a sound base for manufacture of chemicals on a sizable scale.

Indian chemicals brought in foreign exchange at a value of Rs. 30.85 million during the first five months of 1973-74 (April-August 1973) as compared to Rs. 35.25 million in the corresponding period of 1972-73. Of the total earning during April-August 1973, organic chemicals brought in Rs. 5.15 million, while the share of inorganic chemicals totalled Rs. 25.70 million. In the same period of the preceding year, the respective values were at Rs. 13. 15 million and Rs. 22.10 million.

In the period under review, organic chemicals were imported by a large number of markets among which Netherlands, U.K., U.S.A., Sri Lanka, Japan, Belgium, France, Kuwait and Bangladesh were significant. In the same year, inorganic chemicals were bought by countries like Saudi Arabia, Dubai, Italy, Japan, Kenya, Thailand, U.S.A., Singapore, Yugoslavia, Australia, Congo Republic and U.K.

In their endeavour to contribute to the export efforts of the chemicals sector during 1973-74, M/s. Indian Organic Limited, 28, Apollo Street, Fort, Bombay-1, hope to earn on the basis of orders secured, foreign exchange to the tune of Rs. 10 million. The firm's range of export products covers a number of chemicals and allied products. Polyester fibre occupies a significant place among its production range. Among others, acetic acid glacial and its derivatives and polyethylene carboys are prominent.

Despite shortage of DMT, the essential raw material used in the manufacture of polyester fibre, the firm has produced 3400 tonnes of fibre so far. For 1973-74, the production is targetted at 4,000 tonnes as against the rated annual capacity of 6,100 tonnes. During 1972-73, its production of polyester fibre was of the order of 1124 tonnes only. The firm's plant at Khopoli in Maharashtra produced chemical products worth Rs. 29.20 million during the first 9 months of 1973-74 which was higher as compared to the production in the corresponding period of the preceding year at Rs. 19 million. The firm's plant for the manufacture of polyester fibre is located at Madras.

INDIAN GARMENTS TO WEST EUROPE

Indian ready-made garments are enjoying growing popularity the world over because of their elegant designs and fittings. During 1972-73, India's export value of clothing (excluding fur clothing) shot up to Rs. 560 million from Rs. 376.50 million in 1971-72. Of this, textile clothing (not knitted or crocheted) alone accounted for Rs. 339.60 million.

In this category, cotton trousers and other cotton outer garments for men and boys constituted the major export item in 1972-73. Their foreign exchange earning was of the order of Rs. 105 million. Girls' cotton dresses including trousers, blouses, play-suits, dressing gowns and other dresses for girls fared equally well with an export earning amounting to Rs. 104.40 million. U.S.S.R., U.S.A., U.K., Sweden, Canada and Netherlands were the main destinations for these clothings.

In addition to textile fabric clothing, the textile clothing accessoriess also contributed sizeably to the export earning. In 1972-73, the share of knitted clothing accessories was more than Rs. 168 million while a comprehensive range of unknitted accessories like shawls scarves, handkerchiefs and ties fetched Rs. 48.2 million. U.S.S.R. was the major buyer for knitted accessories while U.K., France and German Federal Republic were among the leading purchasers for unknitted clothing accessories.

Contributing to this rising export trend are M/s. Hindustan Garments Ltd., A-2, Anand Niketan, New Delhi-23 who are exclusively engaged in the production of ready-made garments recently, secured export orders worth Rs. 1.4 million from France. The firm is reported to be exporting 5000 garments to Western countries every month. The firm expects to conclude an agreement with a French fashion house for manufacture of garments for them in India.

The Delhi firm has been a regular supplier of garments to France and U.K. and is endeavouring to tap other markets as well. Their range of export includes shirts, vests, ties and other items in the line.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT REVIEW

Registering a sizeable increase, India's exports during the first five months of 1973-74 (April-August 1973) totalled Rs. 8502.35 million as compared to Rs. 7549.45 million in the corresponding period of the preceding year, according to the Directorate General of Commercial Intelligence and Statistics, Calcutta.

During the period under review several categories improved their overseas offtake as compared to their export value in the corresponding period in the previous year. A sizeable increase was noticed in respect of meat and meat preparations; fish and fish preparations; fruits and vegetables; coffee, tea, cocoa and spices; feeding stuff for animals; tobacco and tobacco manufactures; oil seeds; nuts and kernels; crude rubber; wood lumber and cork products; metalliferrous ores and scrap; coal, coke and briquettes; fixed vegetables oils and fats; medicinal and pharmaceutical products; leather and leather manufactures; wood and cork manufactures; paper, paper board and manufactures; textile yarn fabrics; made up articles and related products; non-metallic mineral manufactures; iron and steel products; non ferrous metals; machinery (other than electric); machinery and transport equipment; furniture and travel goods.

In the same period, declining trend was noticed in respect of a number of categories. However, reduction in exports was more visible in respect of food items, textile fibres, crude fertilisers and minerals, petroleum and petroleum products, with a view to conserve them for domestic consumption. Among other categories, chemical elements and compounds, dyeing, tanning and colouring materials, essential oils and perfume materials, plastic materials, rubber manufactures, manufactures of metals, electrical machinery, apparatus and appliances, clothing, footwear, professional, scientific and controlling instruments suffered setback during the period under review as compared to their export value in the preceding year.

In terms of value, export of meat and meat preparations shot up to Rs. 18.85 million (April-August 1973) from Rs. 5.72 million (April-August 1972). Fresh and frozen meat constituted the major area of export growth in this category. Fish and fish preparations exports too jumped to Rs. 337.60 million from Rs. 232 million. The increase was recorded mainly because of large overseas offtake of fresh fish and that of fish in airtight containers. Fruits and vegetables exports earned more at Rs. 419.20 million as compared to Rs. 375.20 million while exports of feeding stuff for animals increased sharply to over Rs. 710 million from Rs. 256.50 million. Tobacco and tobacco manufactures exports, however, improved moderately from nearly Rs. 400 million to Rs. 447.85 million while that of oil seeds, nuts and kernels increased from Rs 29.25 million to Rs. 47.75 million.

Crude rubber exports more than doubled to fetch Rs. 104.50 million as compared to Rs. 46 million. Sizeable increase was recorded by metalliferrous ores and metal scrap too which earned Rs. 536.65 million as compared to Rs. 387.60 million. Overseas supplies of coal, coke and briquettes rose sharply to Rs. 15.75 million from Rs. 9 million. Fixed vegetables oils and fats exports registered more than four-fold increase at Rs. 135.72 million as against only Rs. 31.40 million. Leather and leather manufactures too brought in more foreign exchange at Rs. 833.60 million as compared to Rs. 594.85 million while wood and cork manufactures fetched Rs. 8.35 million as against Rs. 4.48 million. Iron and steel products exports also earned more at Rs. 211.45 million as against Rs. 188.25 million. The increase was largely attributed to the increased overseas intake of pig iron, rails and railway track construction materials and ingots and other primary forms of iron and steel. Machinery (other than electric) fetched more foreign exchange at Rs. 139.70 million as compared to Rs. 106.85 million, mainly because of sizeable overseas supply of power generating machinery, office machines, metal working machinery and other machinery and appliances. Transport equipment crossed the Rs. 100 million mark from Rs. 91.50 million. In this category railway vehicles and road motor vehicles were the significant items of large overseas intake. Travel goods exports improved sizeably to Rs. 12.40 million from Rs. 8.80 million. The textile yarn fabrics and made-up articles, however, registered only a moderate increase in foreign exchange earning at Rs. 1915.70 million from their earlier level of Rs. 1842.10 million. The same uptrend was also noticeable in respect of some other categories, such as, paper, paperboard and manufactures at Rs. 18.85 million against Rs. 16.40 million; non-ferrous metals at Rs. 32.80 million against Rs. 30.20 million; sanitary, plumbing, heating and lighting fixtures at Rs. 3.40 million against Rs. 2.18 million and furniture at Rs. 4 million against Rs. 2.42 million.

The items with reduced overseas offtake during April-August 1973 as compared to their performance in the same period in the preceding year were : dairy products and eggs Rs. 0.50 million against Rs. 3.26 million; cereals and cereal preparations Rs. 14.80 million against Rs. 228 million (wheat pulses, maize and rice exports were curtailed with a view to spare these for home consumption); sugar and sugar preparations Rs. 38.20 million against Rs. 82.25 million; hides, skins (undressed) Rs. 0.30 million against Rs. 4.50 million; textile fibres Rs. 116.75 million against Rs. 171.70 million (jute, cotton, wool and other animal hair were mainly responsible for the decline); crude fertilisers Rs. 65.15 million against Rs. 102.80 million; petroleum and petroleum products Rs. 30.35 million against Rs. 52 million; chemical elements and compounds Rs. 30.85 million against Rs. 35.25 million; dyeing, tanning and colouring materials Rs. 28.70 million against Rs. 33.65 million; essential oils and perfume materials Rs. 38.30 million against Rs. 42 million; electrical machinery, apparatus and appliances Rs. 85.52 million against Rs. 96.60 million; clothing Rs. 219.65 million against Rs. 245.55 million; footwear Rs. 37.20 million against Rs. 47.20 million; and professional scientific and controlling instruments Rs. 21 million against Rs. 31.50 million.

During April-August 1973, East Europe, ECAFE and EFTA regions were the areas of sizeable improvement of Indian exports. East Europe which is India's one of the important trading regions, occupied first place so far as valuewise intake is concerned. It imported worth Rs. 2065.70 million as against Rs. 1815.70 million. U.S.S.R. retained its position as a foremost buying country which purchased Indian goods worth Rs. 1324.35 million as against Rs. 1178.70 million. Besides U.S.S.R., Yugoslavia (Rs. 82 million against Rs. 46.85 million), Hungary (Rs. 95.25 million against Rs. 58.15 million), Bulgaria (Rs. 109.65 million against Rs. 90.15 million), Poland (Rs. 171 million against Rs. 161 million), Rumania (Rs. 66.20 million against Rs. 41 million) and German Democratic Republic (Rs. 64.60 million against Rs. 60.80 million) were the destinations of higher intake. Czechoslovakia was the only country which bought less at Rs. 152.50 million as compared to Rs. 170 million.

ECAFE region constituted the next best buying area of Indian goods. It imported worth Rs. 2361 million (April-August 1973) as compared to Rs. 1852 million (April-August 1972). Japan was the biggest buyer in the region which increased its purchases to Rs. 1336.20 million from Rs. 790.85 million. Australia too bought more at Rs. 167.40 million as compared to Rs. 103.30 million, followed by Singapore at Rs. 106 million as compared to Rs. 64.30 million and Malaysia at Rs. 62.65 million as compared to Rs. 30.40 million. Apart from these significant markets, Afghanistan (Rs. 56.45 million against Rs. 37.47 million); Hong Kong (Rs. 87.90 million against Rs. 72.20 million); Indonesia (Rs. 28.75 million against Rs. 18.60 million), Korea Republic (Rs. 32.85 million against Rs. 9.65 million), New Zealand (Rs. 43.65 million against Rs. 38.20 million) and Philippines (Rs. 7.25 million against Rs. 4.66 million) were the other markets which imported more during the period under review

In fact, these countries were able to offset the reduction in exports to some other countries in the region. For instance, Iran which bought Indian goods at a cost of Rs. 112.90 million in April-August 1972 reduced the purchases to Rs. 98.30 million in the period under review of the following year. Burma also bought less at Rs. 5.85 million as compared to Rs. 25.75 million (April-August 1972). Among other buyers which imported less were Nepal, Bangladesh and Thailand.

European Common Market countries improved their intake to Rs. 996 million from Rs. 773 million during the respective periods. Barring France which maintained more or less the same level of intake during April-August 1973 as compared to that in the same period of the previous year, almost all the member countries of ECM improved their purchases sizeably. For instance, Italy imported worth Rs. 264.50 million as compared to Rs. 163.20 million; Netherlands Rs. 146 million as compared to Rs. 99.30 million; Federal Republic of Germany Rs. 311.35 million compared to Rs. 260.30 million and Belgium Rs. 118.45 million compared to Rs. 91.65 million. Besides these, Luxembourg was yet another country in the region which bought Indian goods, though of negligible value.

Apart from these, European Free Trade Area at Rs. 1058.20 million as compared to Rs. 877.90

million, Latin American region at Rs. 28.95 million compared to Rs. 23.40 million and other European countries at Rs. 102.55 million as compared to Rs. 89.35 million were the other regions which purchased more during April-August 1973 than their purchase value in the same period of the last year.

However, the North American Region, African region and Antartic and Artic regions were the specific areas which bought Indian goods in less quantity (April-August 1973) as compared to their purchases in the corresponding period of the last year.

Sharp difference in purchases was more visible in respect of North American region which bought less at Rs. 1255 million as compared to Rs. 1335.37 million. Both the countries in the region i.e. U.S.A. and Canada imported less (U.S.A. at Rs. 1143.40 million against Rs. 1196.35 million and Canada at Rs. 111.55 million against Rs. 139 million). African region reduced its intake to Rs. 313 million from Rs. 449.45 million. The decline was evident because of less purchases by Arab Republic of Egypt (Rs. 41.40 million against Rs. 132.70 million), Zambia (Rs. 8.85 million against Rs. 33.57 million), Sudan (Rs. 51 75 million against Rs. 65.10 million), Swaziland (Rs. 4.20 million against Rs. 14.38 million).

EXPORT TRENDS IN BASIC CHEMICALS, PHARMACEUTICALS AND SOAPS

India's exports of basic chemicals, pharmaceuticals and soaps during the first nine months of 1973-74 (April-December, 1973) are estimated to aggregate to Rs. 445.68 million as compared to Rs. 290.51 million and Rs. 267.69 million of the corresponding period of the two years - 1972-73 (April-December 1972) and 1971-72 (April-December 1971).

During April-December 1973, the overall exports of items falling in the group basic chemicals, pharmaceuticals and soaps have shown a remarkable increase and the prorata target of Rs. 375.7 million visualised for the period April-December 1973 by the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council, Jhansi Castle, 7 Cooperage Road, Bombay-1, has since been surpassed.

Category-wise, drugs, pharmaceuticals and fine chemical earned Rs. 238.0 million during April-December, 1973 as against pro-rata target of Rs. 120.0 million - an increase of nearly 100 per cent over the target. Dyes, intermediaries, alcohol and coal tar chemicals achieved nearly 75 per cent of the target - their achievement being Rs. 50.4 million. During the 9 month period, inorganic, organic and agro chemicals fetched Rs. 50.12 million out of which inorganic chemicals alone accounted for Rs. 41.62 million. Glycerine, soaps, detergents, cosmetics, etc. brought in Rs. 28.0 million as export value while crude drugs accounted for Rs. 34.69 million. The export performance of aggarbatties was Rs. 11.18 million and that of essential oils as much as Rs. 29.97 million.

Total export of basic chemicals, pharmaceuticals and soaps, for 1973-74 has been targetted at Rs. 501 million.

WOOLLEN SHAWLS ON EXPORT FRONT

India's export of woollen shawls earned foreign exchange amounting to Rs. 2.12 million during the first six month of 1973-74 (April-September 1973) as against Rs. 0.7 million during the corresponding period last year.

Significant improvement was recorded in case of Bahrein (from Rs. 1,78,000 to Rs. 5,95,000), Saudi Arabia (from Rs. 82,000 to Rs. 3,77,000), Dubai (from Rs. 1,11,000 to Rs. 2,57,000), Bulgaria (from Rs. 35,000 to Rs. 1,20,000) and S. Yeman Republic (from Rs. 1,46,000 to Rs. 1,58,000). Kuwait with Rs. 4,66,000 emerged as a new important destination during the period under review. Export of this item to other countries rose from Rs. 62,000 to Rs. 1,52,000 in the two comparable periods.

CASHEW EXPORTS UP

India's exports of cashew kernels during January-November, 1973 amounted to Rs. 704.8 million as against Rs. 582.6 million during the corresponding period in 1972. Compared to the previous year, the earning has appreciated by Rs. 122.2 million, recording an increase of 20.97 per cent. This increase in the earning is due to the sharp rise (32.5 per cent) in the unit value of exports. The major destinations were USSR, USA, Canada, Japan, UK, Federal Republic of Germany, Australia, Netherlands, Democratic Republic of Germany, Czechoslovakia and Hong Kong.

Indian exports of cashew kernels are steadily increasing. They picked up from a level of Rs. 151.5 million in 1957-58 to Rs. 685.40 million in 1972-73 and in the first half of 1973-74 (April-September, 1973), the export value was over Rs. 462 million. In terms of quantum, the 1972-73 exports stood at 66,065 tonnes while in the first half of 1973-74, they were 34,610 tonnes.

India's exports of cashewnut shell liquid during January to November, 1973 totalled to Rs. 4.50 million as against Rs. 4.45 million in the corresponding period last year, showing a slight improvement.

The Central Plantation Crops Research Institute of Kasaragod has set up a cashew seed multiplication centre at Shantigodu near Puttur in South-Kanara district of Karnatka in view of the urgent need to evaluate the available genetic material for isolating the superior ones and multiplying them so that sufficient planting material could be made available to the cashew cultivators. This seed orchard in the Narimogaru reserve forest is claimed to be the first of its kind in India.

Cashewnut yield in India is less than 400 Kg. per hectare and this can be increased three-folds by planting gentically superior material and adopting proper plant protection measure.

In the item entitled Indo-UK Trade appearing in Vol. IV No. 8, Dated February 23, 1974, the following may please be read in continuation to para 10 on page No. 7.

Following India's negotiations with the EEC on Jute and Coir products, it has now been agreed to continue duty-free entry into U.K. for these products.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PRODUCTION OF GRINDING WHEELS

Of the vast array of small tools and handtools made in India, grinding wheels have a place of their own. With five units in the line, all in the private sector, the actual installed capacity for the grinding wheels stood at 7,316 tonnes while actual production was of the order of 6,850 tonnes valued at Rs. 62 million in 1972. In fact, in 1971, actual production was still higher at 6,925 tonnes. This level was reached consequent upon gradual improvement during the preceding years–3,730 tonnes in 1968, 4,576 tonnes in 1969 and 6,062 tonnes in 1970. Total installed capacity at the end of 1973-74 is estimated at 9,625 tonnes while estimated demand during the same period is likely to be around 11,000 tonnes.

The grinding wheel industry in India is categorised as key/priority one, and is open for licensing. Even foreign collaboration is permitted. Of the five existing units M/s. Carborundum Universal Ltd., Madras, and M/s. Grindwell Norton Ltd., Bombay have access to collaboration with U.S.A., while M/s. Krisnalal Thirani and Co. Ltd., Calcutta and M/s. Industrial Abrasives Cooperative Society Ltd., Bombay, are operating in collaboration with firms in West Germany and Japan, respectively. M/s. Thermal Products Ltd. of Bombay have, however, no collaboration arrangment.

The industry has achieved import substitution to the extent of 80 per cent indigenous contents. Among the raw materials required by the industry, brown aluminium oxide, grain flourospar and miscellaneous chemicals are available from indigenous sources. However, other raw materials such as, silicon carbide grain, white abrasive oxide grain 3, bonding chemicals and glass fabric discs are procured through imports.

Under official policy, the industry is under compulsory export obligation, and has achieved considerable success in the export field. The specific varieties of grinding wheels exported are diamond impregnated wheels, wheels of natural stone and grinding wheels of synthetic abrasive grains and other material. During 1972-73, the foreign exchange earning of these wheels totalled Rs. 1 million as against Rs. 0.7 million in 1971-72. During April - August, 1973 the export earning was of the order of Rs. 0.35 million. In 1972-73, diamond impregnated wheels were supplied mainly to Canada, U.S.A. and Rumania. Bangladesh, Afghanistan and Ceylon were the important buyers of wheels of natural stone. In the order of value of their intake, Thailand, Kenya, Turkey, U.K., Tanzania Republic. Malaysia, Uganda, Japan, Singapore and New Zealand were among the seventeen importing countries of grinding wheels of synthetic abrasive grain. Other varieties of grinding wheels were supplied mainly to U.K., Afghanistan, Iraq, Kuwait, Bangladesh, Malaysia, Nigeria, Kenya, Singapore and Thailand, among others.

NEW STRIDES IN SHIP BUILDING

M/s. Hindustan Shipyard Ltd., Visakhapatnam, have made one more addition to their record of production with the launching last month, of a 13,400 deadweight tonnes liner, MV 'Indian Endurance'.

Significantly within a short period of the launching of 'Indian Endurance', keel for another cargo liner was laid at the same berth in the Hindustan Shipyard. This, 21,500 tonne DWT liner, will be the third biggest multi-purpose bulk carrier cum-general cargo ship to be built at Visakhapatnam and the second of 4 ships ordered by and being built for the Great Eastern Shipping Company Limited, Bombay. The design of the cargo liner, known as 'Pioneer Class' patented by M/s. Blohm & Voss, West Germany, incorporates many firsts for Hindustan Shipyard Limited, viz. straight-line conception, standardisation of structures. automation of engine room machineries and equipment, strengthening for Ice Class to enable the vessel to navigate through light ice conditions, use of Grade 'E' and high tensile steel, standardisation of accommodation and outfit items.

Hindustan Shipyard Ltd., is one of the seven public sector units engaged in the construction and repairs of ships of different sizes. It has made notable strides during the preceding four years, registering almost 83 per cent increase in production during the period. During 1972-73 the shipyard's production reached an all-time high at Rs. 127.60 million as compared to Rs. 90.15 million in 1971-72, Rs. 81.85 million in 1970-71 and Rs. 69.55 million in 1969-70.

Originally set up in 1941, and brought under public sector in 1952, the shipyard has built up capacity to undertake production of ships in the range of 60,000 to 80,000 DWT. It has been building mainly overseas liner vessels. Its annual ship building capacity has been estimated at 3 ships and is expected to go up to a level of 6 ships per annum. The other public sector units in this line include Mazagon Docks (Bombay), Goa Shipyard, Cochin Shipyard, Garden Reach Workshops (Calcutta), Central Inland Water Transport Corporation (Calcutta) and the Government Marine Dockyard at Port Blair.

India's ship-building industry comprises ship-building and repairing units, both in the public and private sectors and has operative tonnage of 2.16 million GRT as compared to only 192,000 GRT in 1947. Additionally 1.5 million GRT is on firm order. By the end of the Fifth Five Year Plan, the country's shipping tonnage is expected to be of the order of 10 million GRT.

NEW PHASE IN BOKARO STEEL PLANT

The first 100 ton L.D. converter of the steel melting complex of the Bokaro Steel Plant commissioned in January, 1974 ushered a new phase in the history of India's steel industry. This converter will produce about 120 tonnes of ingot steel per hour in addition to pig iron which it has been producing since last year. Bokaro has turned the corner, though it will turn out finished steel only after the commissioning of rolling mills in early 1975.

The L.D. Process, also known as the Oxygen converter process was introduced in the Fifties. In the last 20 years, it has acquired a dominant position. Its rival, the open hearth process, which was well established in the industry, had to give way to the new process. At present, more than 50 per cent of the steel produced in the world, comes out of the L.D. process.

The work on Bokaro Steel Plant - fourth in the public sector-was started in 1965 with the technical assistance for construction and commissioning from U.S.S.R. The annual capacity of the plant for ingot steel was reckoned at 4 million tonnes to be rolled into 3.22 million tonnes of hot and cold rolled sheets and coils in addition to 885000 tonnes of saleable foundry iron.

The first landmark in the construction phase of Bokaro was reached in October, 1972 when the first blast furnace complex was inaugurated. During the year 1973 major units which were completed were second coke oven battery, second 55 MW generator, the oxygen plant, the line and dolomite shop including Tar Dolomite Brick making facilities and 6170 meters of mechanized bulk conveyors in addition to the steel melting shop having largest converter of the type in the country. The year 1974-75 will be the most fruitful year in the history of Bokaro during which vital units like slabing mill, hot strip mill, hot strip finishing line, an additional blast furnace, coke oven and sinter land, two more converters, ingot mould foundry, steel and non-ferrous foundry, the forge shop, etc. are to be commissioned. Installation of these additional units would largely mean the fulfilment of 1.7 million-tonne stage. By the end of Fifth Plan (1974-79), Bokaro will account for nearly 25 per cent of ingot steel capacity in the country. Expansion of Bokaro on a continuous basis to 4.75 million tonnes of finished mild steel has been programmed for the plan.

India's iron and steel industry is looking up. The Fifth Plan targets place the production of steel ingots at 12.77 million tonnes, finished steel 9.4 million tonnes, pig iron for sale 2.5 million tonnes and alloy and special steel 752000 tonnes. The targets are to be achieved by expanding the existing facilities and setting up new plants.

RAPID GROWTH OF AUTO TYRE INDUSTRY

Manufacture of sophisticated tyres and tubes in India is a post-war development. Today, India produces a wide range of auto tyres and tubes for scooters, passenger cars, trucks, tractors, earthmoving equipment and even for aircrafts. Specialised requirements are also met.

At present 8 units are engaged in the production of auto tyres and tubes in the organized sector, with a total licensed/registered capacity of 5.8 million numbers each of tyres and tubes. Total capacity for 1973-74 has been reckoned at 6 million numbers each. 13 new units have been approved and one has been allowed substantial expansion. Additional capacity, thus approved, works out to 5.3 million numbers each.

Production of auto tyres and tubes has shown a rising trend. During the last decade (1961-70) the production registered an increase of about 160 per cent. The production at the end of Fifth Plan period is estimated at 10 million numbers.

During the last few years the production figures have been as under :—

(In million numbers)

	1969	1970	1971	1972	1973 Jan.-July
Auto Tyres	4.01	4.04	4.65	4.97	2.56
Auto Tubes	3.27	3.62	4.50	4.73	2.49

Most of the raw materials going into the production of tyres and tubes are indigenously available. Import content is as low as 5 per cent. The imported materials consist of special purpose synthetic rubber, sulphur and synthetic latex.

Auto tyres and tubes industry falls in the 'priority' category and as per present licencing policy, all the items are open for issue of industrial licences. Technical collaboration is permitted with a maximum royalty of 3 per cent on merits.

Indian tyres and tubes are now exported to several countries. During the year 1972-73 the total export earnings from auto tyres were of the order of Rs. 47 million while tubes accounted for Rs. 3.92 million. Respective figures for the period April-August, 1973 are : auto tyres Rs. 17.5 million and tubes Rs. 2.66 million. Tyres for buses and trucks fetched Rs. 11.3 million during this period while the share of tyres for off the road vehicles was about Rs. 4.1 million. Earnings from the export of tubes for trucks and buses during April-August 1973 were of the order of Rs. 2.04 million.

Major buyers of Indian auto tyres and tubes included Yugoslavia, Czechoslovakia, Iraq, U.K., and U.S.S.R.

PRODUCTION OF BLISTER COPPER

The record - breaking production performance at the Indian Copper Complex, Ghatsila of the Hindustan Copper Limited, in December, 1973 was further improved upon during January, 1974, when 1,402 tonnes of blister copper was produced during the month, 22 tonnes more than that of December, 1973.

Following are some of the production figures for the Indian Copper Complex :

(In metric tonnes)

Products	January 1974	January 1973	April-Jan. 1973-74	April-Jan. 1972-73
Ore Milled	71,599	66,355	666,604	600,332
Blister Copper	1,402	1,126	10,357	10,515
Wire Bar	853	841	6,975	6,686
Rolled Products	220	169	2,189	2,559
Kyanite	2,593	2,944	26,499	25,196

Khetri Copper Project

Products	January 1974	December 1973
Ore Milled	38,370	27,564
Concentrates Produced	2,206 (17.9% Cu.)	1,065 (19.75% Cu.)

Dariba Copper Project

Ore Milled	3,292	3,278
Concentrates Produced	158 (25.24% Cu.)	191 (25.45% Cu.)

The major programmes of production of copper metal in the Fifth Five Year Plan are the utilisation of the smelter capacity at Khetri in Rajasthan and Ghatsila in Bihar. Together, these smelters which would have a capacity of 57,000 tonnes per annum, are expected to contribute to a production of at least 45,000 tonnes of copper metal by 1978-79. In order to achieve this, an accelerated programme for the development of the mines to exploit the proved deposits will be undertaken. These include the stepping up of mining activities to achieve a level of 10,000 tonnes of ore per day at Khetri-Kolihan in Rajasthan and the acceleration of the development of several other mines including Rakha and Surda in Bihar.

Another important programme relates to the exploitation of the Malanjkhand ore deposits, which are amenable to open cast mining and are expected to eventually sustain a production of 30,000 tonnes of metal per annum. Expeditious development of this deposit would make it possible to expand copper production in the early years of the Sixth Plan.

400 KILO VOLTS COUPLING CAPACITOR

With the country's bid to switch over from the existing 220 Kilo Volts power transmission system to 400 Kilo Volts system, the Indian engineers have accomplished a challenging job by successfully testing the first 400 Kilo Volts coupling capacitor, completely designed and manufactured at the Bharat Heavy Electricals factory, Bhopal.

The Bhopal-built 400 Kilo Volts coupling capacitor, is used for power line carrier, communication, telemetering and relaying in the 400 Kilo Volts power system. Operating with a voltage transformer, the coupling capacitor can be used for measurement of power besides protection of 400 Kilo Volts system.

The capacitor has passed all the routine and type tests as per IEC standard which include an impulse withstand test of 1550 Kilo Volts, the highest level specified in the international standard for this voltage class.

MANUFACTURE OF MANGO JUICE

India is the largest producer of mangoes accounting for 80 per cent of world production and claims a substantial share of the world market in mango products. World trade in mangoes is, however, limited and there is considerable scope for India to increase the quantum of exports in this field. Pickles and chutneys have been the traditional items of export from India although other mango products, particularly mango juice, has become more significant in recent years. A survey conducted recently has estimated the following targets for export of various mango products :

	1975-76	
Mango slices	10,000	tonnes
Mango juice/nectar	20,000	,,
Mango pulp	5,000	,,
Mango jams	1,000	,,

A unit to manufacture mango juice with a capacity of about 8000-9000 tonnes involves an investment of approximately Rs. 1 to Rs. 1.2 million on plant and machinery, almost all of which will have to be imported if automatic juice line machinery is adopted. Such a unit will require 30,000 to 40,000 tonnes per annum of fresh mangoes as the primary raw material.

Government of India is likely to consider fresh capacity in this field on the merits of each individual case. Although total investment for a 8000–tonne per annum plant is below Rs. 10 million, the establishment of such a venture requires an industrial licence under the Industries (Development and Regulation) Act, 1951 as the foreign exchange requirement for import of capital equipment is more than the prescribed exemption limit. No foreign callaboration, either technical or financial, is needed in the manufacture of mango juice as suitable know-how has been developed indigenously.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

WATER FILTER CANDLES DEVELOPED

Among a number of undesirable impurities, raw water available from certain sources like rivers, ponds, etc. also contains harmful bacteria which cause water borne diseases, such as, cholera and typhoid. Its pretreatment for the removal of such suspended impurities has, therefore, become a practical necessity in all water supplying agencies in order to make the water potable. Various processes are available for the treatment of water for making it suitable for drinking purposes. These fall in the general category of storage, aeration, sedimentation, coagulation, rapid and slow sand filtration and chlorination. But in spite of these treatments, the municipal water supplies in many areas are not completely safe to drink. One of the methods of treatment of water for house-hold purposes is to filter the water through the beds of sand, gravels and charcoal to remove suspended impurities, followed by boiling to kill the harmful bacteria. The process, though efficient, is costly and time consuming.

Keeping such drawbacks in view, the Central Glass and Ceramic Research Institute, Calcutta, carried out investigations for the production of sterasyl type of water filter candles out of the indigenously available ceramic materials and have succeeded in developing a process for the manufacture of such candles without the use of Kieselguhr, which is commonly used for the manufacture of filter elements but which is not available in the country in commercial quantities.

The process developed by the Institute consists of grinding non-plastic materials like quartz, felspar, etc. to required fineness and mixing with china clay and some other organic combustible materials. The casting slip is prepared by addition of the electrolytes. The candles are first moulded by casting, using plaster of Paris moulds of desired shapes. These can also be made by extrusion through pug mill. These are then turned and finished to required dimensions and baked at a suitable temperature in an electrical or oilfired kiln. Candles are then tested for any flaws and then given a special chemical treatment, followed by a second baking to make them suitable for filtering bacteria free water. These are then fitted with caps and checked for any leakage through the caps. Chemically treated and cap assembled candles were sent to four pathological laboratories for bacteria filtration test. Satisfactory reports have been received from all these laboratories.

Besides, Katadyn pocket filter pumps used by Defence personnel for the supply of potable water in the remote areas have also been developed by the Institute. Raw water is pumped through this pocket pump and bacteria - free potable water obtained. The pocket size pump is fitted with a ceramic tube open at both ends. Water passes from the water jacket to the inside of the tube through the porous ceramic tube and gets filtered. The ceramic tube normally lasts three months after which it has to be replaced. The annual requirement of such tubes by Defence is estimated at 21,000 pieces. The Institute has successfully developed these tubes as well which have been tested by the Defence Science Laboratory. Test was carried out using E Coly Organisms which is even smaller than other bacilli like that of typhoid, dysentery and cholera.

The major raw materials required for the manufacture of these candles are refractories, clays, quartz felspar, plaster of Paris, cement, chemicals and organic combustibles. All these are indigenously available. The main items of plant and machinery like edge runner, ball mill, blunger, electro-magnet, furnaces, compressors and dryers are all indigenously available and can be fabricated by the local machinery manufacturers.

MOLECULAR SIEVES

Molecular sieves are synthetically produced crystalline metal aluminium silicates and are used commercially for drying, purifying and separation of liquids and gases. Amongst the many uses, the largest applications are in chemical and petrochemical industries, petroleum refining and cryogenic industry for dehydration and separation. Amongst a host of special applications of molecular sieves are "getters" in vacuum to reduce tramp non-condensables, to purify argon of trace oxygen impurities and for trapping radioactive materials in effluent disposal. Molecular sieves are not produced in the country and the requirements of the country are met by imports. Two of the more important synthetic aluminium silicates (molecular sieves) are types A and X. The National Chemical Laboratory has developed processes for both these types. The know-how has been developed for the types 3A, 4A, 5A, 10X and 13X with a nominal pore size of 3A°, for 3A, 4A° for 4A 5A°, for 5A, 9A° for 10X and 10A° for 13X respectively.

The present demand is estimated at about 300 TPA of 13X and 5A for cryogenic applications and about 300 TPA of 3A, 4A and 5A for petrochemical industry. The demand for these products by petrochemicals sector is likely to go up in the near future.

NEW TECHNOLOGY FOR PRODUCTION OF SODIUM HYDROSULPHITE

Sodium hydrosulphite is a powerful reducing agent. It is used in the printing of textiles and for bleaching sugar, soaps, oils, straws, etc. The current methods for making this chemical make use of either zinc dust which is mainly imported or an electrolysis method is employed which also needs large quantities of mercury in circulation thereby causing losses of mercury and problems of its contamination with the product.

A sodium formate route has been developed on laboratory scale by Indian scientists for the production of sodium hydrosulphite. The new technology gives a purer product and eliminates the use of zinc or mercury.

FLUIDIZED PROCESS FOR SILICON TETRACHLORIDE

The most important application of $SiCl_4$ is in the manufacture of fumed silica (white carbon). Fumed silica is used as a reinforcing, thickening or thixotropic agent and is used in rubber or plastics industry. It also finds application as a dispersing agent in pesticide sprays and has a host of other applications. Other applications of $SiCl_4$ are in the manufacture of ethyl and other organic silicates. Pure silicon and silicones can also be produced from $SiCl_4$. It is reported that the present annual production of $SiCl_4$, in U.S. is about 16-20,000 TPA. In India also there will be a sizeable demand for $SiCl_4$ once the production of white carbon is taken up in the country.

National Chemical Laboratory has developed a continuous fluidized process for the production of $SiCl_4$.

CHLORINATED PARAFFIN WAX

Chlorinated wax is a cheap plasticizer and extender mainly used for flexible PVC. The product is being manufactured in the country but the production is not sufficient to meet the demand. A process has been standardised for the production of chlorinated paraffin wax.

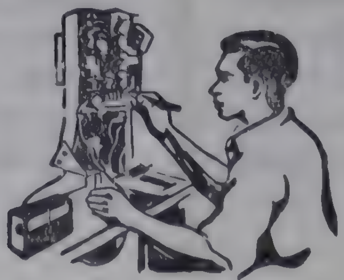
The current demand is estimated at about 4000-5000 TPA. About 2000 TPA are being produced by the Indian manufacturers. The demand is likely to go up to 7000 TPA within next few years and to about 13-14,000 TPA by 1980. Thus there is a good scope for the establishment of a few more units for the production of chlorinated wax.

ETHYL SILICATE

Ethyl silicate of a special grade known as ethyl silicate-40 is a condensed ethyl ester of silicic acid containing about 40 per cent silica. It is an indispensable material for investment casting work, a new casting technique for high precision metal shapes. Although at present, the requirements of ethyl silicate-40 are small, its demand is likely to increase with the expanding investment casting technology. The know-how for this chemical has now been developed in India by Indian scientists.

BASIC TECHNOLOGY FOR MAKING DIBUTYLTIN STABILIZERS DEVELOPED

Dibutyltin stabilizers effectively protect PVC against degradation caused by heat, light and oxygen. Dibutyltin laurate (DBTL) and dibutyltin meleate (DBTM) are some of the widely used PVC stabilizers. Country's present requirements of these stabilizers estimated at about 100 TPA valued at about Rs. 6–7 million are met by imports. A considerable amount of foreign exchange could be saved, if these stabilizers are made with indigenous know-how from the imported tin metal. Basic technology has now been developed for making the DBTL and DBTM from tin metal.



PLANTATION INDUSTRIES OF INDIA

Plantation industries play a significant role in the Indian economy and the well national trade. Tea is the most important of the plantation crops of India and is much ahead of other plantation crops in so far its size, employment, value of production and foreign exchange earnings are concerned. The production of tea has been increasing but the exports are hovering around 200 million kgs. and have not shown a steady upward trend. The unit value realisation is, however, steadily increasing. In the first half of 1973-74 (April-September), India exported 73.74 million kgs. of tea worth Rs. 991.8 million. Quota for 1973-74 allotted under FAO arrangements is 217.8 million kgs. for black tea. The effective quota including export of green tea and instant tea, not covered by the quota, is about 222 million kgs. A five per cent increase over the value of exports in 1972-73 which is estimated at Rs. 1540 million, would mean an export value of Rs. 1617 million. It is quite possible to achieve an export level of 210 million kgs., if not more, provided production is not hampered by adverse weather, exports are not dislocated due to unforeseen circumstances and bottlenecks, such as, strikes in the tea gardens, warehouses, ports or non-availability of ships at the right time.

The Sixth session of the sub-group of the exporters of the Inter-Govermental Group on Tea was held in Rome from 2nd to 4th July, 1973. It was proposed in this meeting that global quota for all exporting countries would be 657 million kgs. and 681 million kgs. during 1973-74 and 1974-75, respectively. The quotas fixed for India in 1973-74 and 1974-75 are 217.8 million kgs. and 224 3 million kgs. respectively.

It has been the desire to increase unit value realisation of tea exports. One of the means is to increase exports of packet tea, instant tea, tea bags, etc. Tea Trading Corporation of India will initially market Indian tea in consumer packs in certain selected countries in West Asia as well as some other countries. It will also market certain specialised brands of tea, such as, Nilgiri, Assam and Darjeeling in the sophisticated markets to cater to the needs of selected clientele.

Coffee comes next in importance to tea. India produces both the main varieties of coffee, namely, Arabica and Robusta. The output during 1972-73 was 90,000 tonnes. In tune with increase in production of coffee, exports have also expanded and were of the order of 43,128 tonnes during April-December 1973, compared to 36,646 tonnes during the corresponding period of 1972. It is expected that export earnings of the value of about Rs. 400 million may accrue during 1973-74. The target of production at the end of the Fifth Five Year Plan has been indicated at 114,000 tonnes, the export target being 61,000 tonnes. Coffee Board, Banglore, is taking care to see that quality of Indian coffee is maintained and improved year after year. Steps are also being taken to further improve the coffee cultural practices and increase thereby the per hectare yield, particularly in the holdings of small growers.

The International Coffee Agreement 1968 to which India is a party has been extended by another two years from October 1973 without economic controls and quota restrictions. The exporting countries are, therefore, left free to avail themselves of the export markets as they consider advisable. India could, therefore, boost up her coffee export, during this period.

New markets are being developed in East European countries and the U.S.A. Special attention is also being given to countries in the Far East, particularly Japan.

The production of natural rubber during 1972-73 was 112,364 tonnes and it is expected that production would increase to 125,000 tonnes during 1973-74. With increase in production, the import of raw rubber has been completely banned with effect from April, 1973.

On the recommendations of the Tariff Commission, Government notified the prices of different grades of natural rubber in September 1970. Following a number of representations that the vulnerable section of the growers were not able to obtain the notified prices and poor offtake by manufacturers, Government directed the State Trading Corporation of India Ltd., New Delhi, to enter into the market and buy the rubber from small growers. The Kerala Government has also entered the field alongwith STC which has helped in stabilising rubber prices and affording support to small growers.

Regd. No. D (S)-083

In order to relieve the markets of surpluses, Government have decided to permit export of 5000 tonnes of natural rubber by S.T.C. and over 2000 tonnes have already been shipped.

In case of spices, India enjoys a great reputation. The annual production of cardamom has ranged between 2100 tonnes to 2700 tonnes with an average of 2300 tonnes in 1969-70. In 1971-72, production was to the tune of 3785 tonnes. Exports of cardamom have ranged between 1150 tonnes to 1600 tonnes on an average. In April-December 1973, 1062 tonnes of cardamom were exported fetching Rs. 63.8 million as compared to April-December 1972 when the quantity exported was 1034 tonnes and earnings Rs. 46 million. Though India exports cardamom to nearly 50 countries, more than 60 per cent of its exports go to the Middle East countries. Tanzania and Guatemala have extended their production and are making serious inroads into India's markets. In order to put this industry on sound economic footing, several development schemes have been launched by the Cardamom Board. There is an organized sustained scientific research on this crop.

In response to the adoption of extensive cultivation there has been a change in the pattern of production. The target for the Fifth Five Year Plan is to produce 4200 tonnes in 1978-79 and export 2960 tonnes valued at Rs. 139.10 million. The long-term strategy for promotion of cardamom exports would relate to attaining higher productivity through research, extension and advisory services; formulation of cardamom community with other countries, such as, Guatemala, Tanzania and Sri Lanka with a view to undertake joint promotional efforts and stabilise prices; product diversification by development of cardamom oil and oleoresins of cardamom; finding alternate uses for cardamom and cardamom oil, exploring the acceptability of cardamom flavour in tooth pastes, chewing gums, liquors and a thrust into the food habits of the developed countries by propagating use of cardamom in favourite national dishes. □

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CHAMOIS LEATHER FUEL FILTER FOR EXPORT

Alongside complete vehicles, India's automobile industry has built up a sound base for manufacture of a comprehensive range of accessories which cater to exact requirements of buyers at home as well as abroad. In fact, recent export trend is indicative of the prominent position of automobile accessories and parts in the overall exports of the automobile industry. A growing number of markets in West Asia, South East Asia and Africa look upon India as a competent supplier of quality items in the line. Constant diversification, coupled with growing indigenisation are the leading factors which enable the industry to add new items of accessories and parts to its production stream every year.

A small-scale unit in the line, M/s. Pavan Automobile Accessories Corporation, Bangalore (Karnataka), for instance, has recently developed a new chamois leather fuel filter for petrol-run automobiles. It is to the credit of this small scale firm to have secured a trial order for 8,000 filters from a well renowned firm M/s. Fiat of Italy for this type of fuel filter. This is expected to be followed by a sizeable order for 2 million numbers from the same Italian firm. The new filter can protect the carburettor from dust particles upto 3 microns as against 60 microns by the conventional paper and asbestos filters.

Apart from the order received from the Italian firm, the Bangalore firm has also received quite a few trade enquiries from all over the world. M/s. Toyata of Japan and an American dealer in automobile accessories have also approached the Indian firm for supplies.

India's automobile ancillary industry has made rapid strides in recent years, both in terms of quantum of production and quality of products. Achieving an output valued at over Rs. 1,300 million, the year 1972-73 witnessed 18 per cent increase over the output value of Rs. 1,130 million in the preceding year. The increase in production was recorded in most of the ancillaries including nozzles, elements, delivery valves, filter elements, dynamos, gaskets, spark plugs, wiper arms and blades, switches, ignition coils, voltage regulators, distributors, gears, commutators and condensers. Likewise output of engine valves, carburettors, water thermostats, clutch plates, clutch cover assembly and hydraulic pumps also improved.

During 1972-73, the industry exported complete vehicles and accessories to the tune of Rs. 160 million as compared to Rs. 149 million in the preceding year. During the first five months of 1973-74 (April-August 1973), the exports were of the order of Rs. 44.85 million as against Rs. 37.35 million in the corresponding period of the preceding year.

INDIAN WOOLLEN GOODS POPULAR IN DEVELOPED COUNTRIES

With foreign exchange earning to the tune Rs. 13.85 million during 1972-73, M/s. Raymond Woollen Mills Limited, J.K. Building, Ballard Estate, Post Box No. 1212, Bombay-1, have amply proved qualitative supremacy as well as price competitiveness of Indian woollen items in international markets. Woollen fabrics and readymade garments manufactured by the firm were mainly bought by a number of sophisticated markets abroad, such as, Canada, Denmark, France, Italy, Sweden, USA, Federal Republic of Germany and UK during the year. Of the total export realisation of the firm, woollen fabrics accounted for the major share at Rs. 9.4 million while readymade garments brought in Rs. 4.35 million. Fabrics were mainly imported by Canada, France, Denmark, Italy, Sweden and USA while readymade garments found their way to Denmark, Norway, Sweden and Federal Republic of Germany among other countries.

Established in 1924, the firm is well set in the line covering a comprehensive range of woollen items in its production stream. Its profile of manufactures today covers all wool fabrics, polyester-wool mixed fabrics, readymade garments made out of all wool fabrics and polyester-wool mixed fabrics, woollen blankets and knitting yarns. Covering as many as 60 per cent markets of India's woollen sector, the firm has emerged as a supplier of quality woollen goods which compare favourably with prevailing international standards in the world of fashion.

India's woollen industry is achieving new strides in exports from year to year. During 1972-73, its foreign exchange earning was at a peak level of Rs. 480 million. This marked more than 34 per cent increase over the exports in the preceding year at Rs. 358 million. In fact, the exports rose to this level from only Rs. 264

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million in 1967-68. USSR, Federal Republic of Germany, USA, UK, Canada, Netherlands, Poland, Czechoslovakia, Libya, Hungary, Kuwait, Sweden, Belgium and Malaysia were the significant markets during 1972-73.

During the first eight months of 1973-74 (April-November 1973), the exports were of the order of Rs. 223 million which were slightly lower as compared to the export value in the corresponding period of the preceding year at Rs. 331 million. Varietywise the export value during April-November 1973 was: woollen hosiery goods Rs. 138.50 million; druggets, carpets and numdahs Rs. 135.60 million; raw wool Rs. 26 85 million; woollen worsted and mixed fabrics Rs. 12.50 million; woollen readymade garments Rs. 4.70 million; woollen blankets Rs. 1.90 million and shawls and lohis Rs. 2.70 million. USSR and Czechoslovakia were the main buyers of woollen hosiery while USA, Federal Republic of Germany, U.K. and Canada were the principal importers of carpets, druggets and numdahs. Raw wool was mainly bought by UK, USSR and Belgium while UK was the topmost buyer of woollen worsted and mixed fabrics.

MANGO JUICE TO SOVIET UNION

Preserved fruits and fruit preparations are gradually emerging as promising items in India's export trade in recent years. During 1972-73, these brought in as much foreign exchange as Rs. 20.36 million against Rs. 18.35 million in 1971-72 and Rs. 17.25 million in 1970-71. A wide variety of fruits and fruit preparations are supplied abroad under this category. Among these, mango juice occupies a significant place in this sector as it accounts for the bulk of earning which is growing from year to year. For instance, during 1972-73, its export earning was as high as Rs. 20.36 million (9.70 million kgs.) which outstripped the entire export value of preserved fruits and fruit preparations sector in 1971-72 (Rs. 18.35 million). In 1971-72, the export value of mango juice was of the order of Rs. 12.52 million (5.91 million kgs). In terms of value, the exports during 1972-73 registered more than 66 per cent increase over the export realisation in 1971-72.

U.S.S.R. constituted the largest single importing destination during 1972-73 which alone bought 7.85 million kgs. of mango juice valued at Rs. 15.27 million. In 1971-72, its total intake was of the order of Rs. 4.48 million kgs. at a cost of Rs. 8.15 million. Next to U.S.S.R., Poland was the second important market which purchased 0.73 million kgs. at Rs. 1.72 million. South Yemen People's Republic, U.S.A., U.K , Saudi Arabia, Dubai and Bahrein Islands were significant among other buyers.

During the first five months of 1972-73 (April-August 1973), the exports of mango juice totalled Rs. 2.68 million and U.S.S.R., Saudi Arabia, U.S.A and South Yemen People's Republic were the leading destinations.

Apart from mango juice, mango slice brine, mango chutney and mango pickles were other mango products active in export trade during 1972-73. U.K., Iraq, Kuwait and U.S.A. were the prominent importing countries for these products.

Adding to the export success of the processed fruits sector of Indian economy during 1972-73, M/s. U. P. State Agro Industrial Corporation Limited, Lucknow, exported mango juice to the Soviet Union at a value of Rs. 566,000 during the year. The Corporation is endeavouring to explore new markets for the product and hopes to improve its export earning sizeably in the coming years.

The Corporation's Processed Foods Division achieved improved production turnover during 1972-73. Its output rose to Rs. 3 million from Rs. 2.2 million in 1971-72. Apart from production, the, Corporation's sale of agro-products more than doubled to over Rs. 2.23 milllon from Rs. 1.04 million.

Besides producing processed fruits, the Corporation is engagad in manufacture of agricultural implements like seed cum-fertiliser drill, sugarcane planter and paddy thrasher. It also produces cattle feed and deals in fertilisers. It distributes tractors in U.P. State. Lately, it has also set up a scheme for renovation of tractors.

HANDICRAFTS IN EXPORT TRADE

Simultaneously with the strides being made in the export of non-traditional products, such as, engineering goods, chemicals and plastics, the Indian exporters continue to avail of the traditional sector like handicrafts and handlooms to add to the foreign exchange earning of the country. India's export trade in handicrafts has, in fact, been witnessing a consistent uptrend. The value of such exports, excluding gem and jewellery, reached a level of Rs. 518 million in 1972-73. Among the important items contributive to this earning were woollen carpets (Rs. 214.50 million), art metal wares (Rs. 86.50 million), handprinted textiles (Rs. 48.3 million) and wood ware (Rs. 40.4 million). In order of the value of their intake, West European and American countries were the major export destinations, followed by Asia and Oceanian countries and East European countries. Exports to African region were not very appreciable.

In keeping with this uptrend, one single manufacturer/exporter, M/s. Vali Brothers, Tobacco Street, Moradabad, dealing in handicrafts including metal wares and miniature sets, have succeeded in stepping up their exports to nearly Rs. 2.33 million as compared to Rs. 1.69 million in 1971-72, and a mere Rs. 0.90 million in 1970-71. Their exports during the year 1973-74 are expected to be higher as their foreign exchange earning for just first two months of the year is reported to have exceeded Rs. 3 million. In 1973, the firm also participated in the International Frankfurt Autumn Fair and booked orders valued at about Rs. 1 million.

The total production of handicrafts was estimated at Rs. 4,000 for the year 1972-73. During the Fifth Five-Year Plan (1974-75 to 1978-79), it is targetted to increase to a level of Rs. 6,000 million while exports in the period are to be raised to Rs. 2,000 million. To achieve these targets, rural and tribal crafts are being accorded special encouragement and emphasis is being laid on the development and marketing of lesser known crafts.

EXPORT PERFORMANCE AND POTENTIAL

INDIA'S FOREIGN TRADE IN NOVEMBER 1973

India's exports, including re-exports, during November 1973 were estimated at Rs. 2088 million, registering an increase of Rs. 429 million over the same month of the preceding year. The total exports for the first eight months of 1973-74 (April-November 1973) amounted to Rs. 14879 million as compared to Rs. 12312 million during the corresponding period of 1972-73 (April-November 1972). Thus, the exports have increased by Rs. 2567 million or about 21 per cent during the first eight months of 1973-74, as compared to the corresponding period of 1972-73.

India's imports during November 1973 at Rs. 2596 million were Rs. 1642 million more than in November 1972. The figures of imports during 1973-74 (April-November) at Rs. 15589 million were higher than in the same period in the preceding year by Rs. 4837 million or about 45 per cent.

As a result of larger increase in imports, as compared to exports, the balance of trade during the first eight months of the current financial year (1973-74) turned into a deficit of Rs. 710 million as compared to the favourable balance to the extent of Rs. 1561 million during the corresponding period of last year (1972-73).

CERAMICS AND ALLIED PRODUCTS EXPORTS UP

Ceramics industry plays a vital role in the industrial development of India. It provides insulators, both H. T. and L.T., so essential for power distribution. The building industry also requires ceramic products such as glazed tiles, earthenware, asbestos cement sheets and pipes. Another ceramic product, crockery, is used in almost every household. The industry's contribution to India's export earnings is also significant. In 1972-73, exports of ceramic products fetched Rs. 13.4 million and thus exceeded the export target of Rs. 12.1 million set for the industry for the year 1973-74.

During the year 1973-74, the performance of exports is still better. Exports of all varieties of ceramic products during the first eight months of 1973-74 (April-November 1973) were valued at Rs. 8.45 million indicating an improvement of 28 per cent over the figure of Rs. 6.26 million in April-November 1971. During April-November 1973, the value of goods exported was Rs. 6.60 million.

Several items in the group have revealed export improvement in the first eight months of 1973-74. Sanitaryware earned Rs. 2.01 million in April-November 1973 against Rs. 1.23 million in April-November 1972 and Rs. 1.11 million in April-November 1971.

Export earning from asbestos cement sheets during April-November 1973 was Rs. 1.97 million, which was lower than the level of Rs. 2.44 million in April-November 1972 but considerably higher than Rs. 1.31 million in April-November 1971. Asbestos cement pipes fetched Rs. 0.61 million, about four times the level of Rs. 0.16 million exported during April-November 1972. Other asbestos products earned Rs. 0.27 million and Rs. 0.29 million in 1973-74 (April-November) and 1972-73 (April-November) respectively. Asbestos friction material accounted for Rs. 1.25 million in April-November 1973 and Rs. 1.15 million in April-November of 1972.

Glazed ceramic sets fetched Rs. 0.63 million in April-November 1973, more than double of Rs. 0.28 million earned in April-November 1972. Export earnings from household crockery during April-November 1973 were also considerably higher.

Insulators, both H.T. and L.T., were exported to the tune of Rs. 0.46 million in April-Novmber 1973 against Rs. 0.39 million in the corresponding period of the previous year.

Export of emery grain powder and paste during April-November 1973 amounted to Rs. 0.84 million whereas it was only Rs. 0.11 million in April-November 1972.

The other products in the group exported from India are artificial teeth, earthenware tiles and asbestos jointings.

Exports of Indian ceramics are mainly to Persian Gulf and to neigbouring countries in South East Asia. Thus sanitarywares were exported to Oman, Abu Dhabi, Afghanistan and Bangladesh. Australia and Yugoslavia were the main purchasers of crockery. Glazed ceramic tiles found a market in Muscat and Tanzania and earthenware tiles in Malawi. Asbestos sheets were exported mainly to Abu Dhabi, Japan and Malaysia while Iran was the major purchaser of miscellaneous asbestos cement products.

Electrical insulators were exported mainly to Burma, Indonesia, Iraq, Sri Lanka, Malaysia, Thailand, Singapore, Nigeria and Kuwait among other countries.

TRADE WITH GULF COUNTRIES

India's trade with the gulf countries has assumed very great importance in view of the current oil crisis all over the world. These countries, namely, Kuwait, Bahrein, Oman (Muscat), Qatar, Iran and Iraq have some common salient factors.

To meet the current oil challenge, India has to make all-out efforts to boost up export trade to this important region in particular. Since all the countries in this region are trying to raise their standard of living and are industrialising themselves, there is a great scope to push India's non-traditional items like builders' hardware, road building equipment, hospital and laboratory equipment, electrical fittings and domestic appliances and light engineering goods. Other items which have scope for export to this region are cement, chemicals, drugs and pharmaceuticals, leather goods, tinned and preserved foods, auto parts, toiletry and cosmetics, basmati rice and sugar.

Following figures show the trade pattern of India with these countries :

(Rs. in million)

	Exports		Imports	
	1971-72	1972-73	1971-72	1972-73
Kuwait	108.3	149.5	130.4	255.1
Bahrein Islands	35.5	31.1	3.0	3.4
Oman (Muscat)	29.2	24.3	4.1	3.3
Qatar	28.5	32.7	4.9	27.5
Iran	197.5	247.7	1263.6	1214.6
Iraq	100.0	109.8	35.6	66.0

It would appear that in this region Iran and Kuwait have been the leading trade partners of India. India's imports from these countries mainly comprised of petroleum and petroleum products, while her exports concentrated on traitional items like tea, spices, cotton manufactures and piece-goods. Of late, however, the trend has been shifting towards non-traditional items. For instance, export of machinery and transport equipment to Kuwait in 1972-73 was of the order of Rs. 30.8 million against Rs. 23.1 million in 1971-72. Manufactures of metals rose from Rs. 6 million in 1971-72 to Rs. 8.9 million in 1972-73.

During the years under review, Iran's offtake of machinery and transport equipment rose from Rs. 29.8 million to Rs. 32.4 million and that of manufactures of metal from Rs. 20.2 million to Rs. 24.3 million. Glass and glassware registered an increase from Rs. 0.7 million in 1971-72 to Rs. 2.5 million in 1972-73.

As stated earlier, the need for pushing Indian non-traditional products into the oil producing countries has never been greater than now. Recently, Indian Minister of Commerce, Prof. D. P. Chattopadhyaya visited Kuwait and other countries to explore possibilities of expanding trade. He had talks with Kuwati Government and also signed a trade and economic agreement with that country. The agreement provides for the setting up of a joint committee to identify areas for economic cooperation. While in Kuwait, the Commerce Minister convened a meeting of the Indian Commercial Representatives stationed in West European capitals. He discussed various ways in which India's exports could be enlarged all over the world in general and to the oil producing countries in particular. The emphasis is being placed both on traditional as well as non-traditional items.

BOOST IN OFFICE MACHINE EXPORTS

India's exports of office machines, including parts, during the first five months of 1973-74 (April-August 73) registered nearly three-fold increase at Rs. 10 million as compared to Rs. 3.60 million in the corresponding period of the preceding year.

During the period under review of 1973-74, statistical machines, such as, punches constituted the major group of export trade in the line, having secured Rs. 8.73 million. Japan with an offtake worth Rs. 5.10 million was the principal customer. Next best purchaser was Australia whose intake was nearly Rs. 1.89 million. Indonesia, New Zealand and philippines were the other leading destinations.

Calculating machines (manually operated) were sold to France and Hungary to fetch about Rs. 0.22 million. Typewriters which constitute another area of export trade in the group of office machines also earned about Rs. 0.30 million. Bangladesh topped the list of buyers which also included Sri Lanka, Ghana, Nepal, Singapore and U.S.S.R.

Bangladesh and Thailand accounted for the bulk of Indian exports of duplicating machines which secured Rs. 0.13 million in foreign exchange.

Besides complete office machines, parts of these machines netted Rs. 0.75 million in foreign exchange. Of this statistical machine parts alone accounted for Rs. 0.42 million. Brazil who bought worth Rs. 0.32 million was the principal buyer. France and Italy were the other important purchasers.

The production of data processing machine in India in 1972 was of the order of Rs. 31 million. The range of output included calculators, punches, verifiers, sorters, collators, accounting machines, tabulators, interpreters, reproducers and gang punches. There are two major units in production of these machines and both the units are taking up manufacture of the latest models to cope with the overseas demand.

In the typewriter industry, actual production in 1972 was of the order of 41,971 numbers. There are four units in the organised sector in the line with an installed capacity of 86,400 numbers per year. Two of these units are having foreign collaboration. Besides the existing units, one unit has received industrial licence for the manufacture of portable typewriters with a capacity of 15,000 numbers every year. Additionally, letters of intent have been issued to four units for setting up new units for a total capacity of 8,69,100 numbers yearly. Besides, two units have been registered for an annual capacity of 19,500 numbers. If all the schemes materialise, the total projected capacity would be 1,90,000 numbers per annum in due course.

Imports of typewriters are not allowed into the country. Foreign collaboration is, however, permitted for portable and electric typewriters.

INDO-HONG KONG TRADE

India's export trade with Hong Kong amounted to Rs. 201.4 million during 1972-73 as compared to Rs. 157.9 million in 1971-72. In 1967-68, India's exports to Hong Kong stood at Rs. 83.5 million only.

India has traditionally a favourable balance of trade with Hong Kong, though the volume of trade has been limited. India's imports from Hong Kong were of the order of Rs. 19.2 million in 1972-73 as against Rs. 22.1 million in 1971-72. In 1967-68, India's imports from Hong Kong were Rs. 8.7 million only.

Major items of India's exports to Hong Kong have been pearls, precious and semi-precious stones, materials of animal origin, cashew kernels, iron and steel, woollen fabrics and medicinal and pharmaceutical products. The major items of import from Hong Kong to India were pearls, precious and semi-precious stones, printed matter, machinery (other than electric) and hides and skins undressed.

Hong Kong is one of the most important centres of trade in Asia - indeed in the world. Its importance lies not only in the prospects for exporting directly to the Colony, but also in re-exports to other countries. It is a major shopping centre, larger than Rotterdam, New York and Singapore and about a fifth of total export from Hong Kong is accounted for by re-export. The Colony also serves as a distribution point for Taiwan, Philippines and other neighbouring countries and even those on the west-coast of America.

With appropriate export measures, India can make a successful entry into Hong Kong market for a wide range of commodities, particularly engineering goods, drugs and pharmaceuticals, plastic raw materials, machinery and equipment, etc. The growing industrialisation of Hong Kong offers a market for the Indian engineering goods, components and intermediates and semi-finished raw materials.

Hong Kong is also a big centre for sale of consumer goods. Duty free import has not only made it a 'shopping paradise' for tourists from all over the world, but the Colony also draws a large number of major buyers from the U.S.A. and other parts of the world.

With considerable construction activity in the Colony and also in the neigbouring countries, including Taiwan, there is a scope for the sale of Indian steel structurals, builder's hardware, sanitary fittings, decorative fittings, kitchen apparatus, linen and other maintenance items.

As a shopping centre, Hong Kong offers a market for export of tools and equipment for the local workshops. There are commodities like fruits and vegetables, which also have a good scope.

A study team of the Engineering Export Promotion Council, Calcutta, surveyed the market for engineering goods and identified the following items as having substantial export potential in Hong Kong : motor cars, buses, trucks and parts thereof; steel pipes and tubes; bolts and nuts, screws, hand tools, machine tools, building materials, wire ropes, welding electrodes and soldering rods, textile and sewing machinery, air-conditioners and refrigerators, electric motors, generators and transformers, electric components, umbrella parts and fittings and metal furniture.

INDIA'S TRADE WITH DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

Trade and Payments Agreement for three years and Trade Protocol for 1974 between India and the Democratic People's Republic of Korea were signed on February 18, 1974.

The Trade Protocol envisages a trade turnover of approximately Rs. 260 million. It is hoped that the trade volume in 1974 will register a substantial increase over the trade in 1973. The highlights of the Trade Protocol for 1974 are that D.P.R.K. will supply urea, zinc, steel, mild steel billets, lead, anthracite, magnesia clinker, etc. to India.

India's exports to D.P.R.K. will include commodities like leather, cotton, synthetic and woollen textiles, tyres and tubes, detergents, jute bags and ropes, rubber, wire ropes, etc.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

SYNTHETIC DETERGENTS PRODUCTION UP

India's production of synthetic detergents which have been introduced as washing material, comparatively lately in the country, has registered a constant uptrend in recent years. It reached a level of 63,000 tonnes in 1972 compared to 51,574 tonnes in the preceding year. Earlier, the production was only 16,547 tonnes in 1967; 17,603 tonnes in 1968; 21,729 tonnes in 1969 and 29,790 tonnes in 1970. The demand for these detergents is estimated at 85,000 tonnes at the end of 1973-74, while total capacity likely to materialise by beginning of the next year (1974-75) is placed at 1,14,100 tonnes.

The synthetic detergents industry is categorised as a non-priority one. Of the five units in the line, three are operating on their own while two units have access to financial collaboration from U K. Requests for setting up new units in the line are considered on merits. Import of these detergents is, however, banned.

Among the raw materials required for production of these detergents, sodium tripolyphosphate, sodium sulphate, caustic soda, oleum and sodium silicate are all available indigenously. In fact, alkyl benzene is the only item which needs to be procured by the industry through import. The import content for these detergents is thus around 5 per cent of the ex-factory value. Even production of alkyl benzene is to be undertaken in the country by Indian Petro Chemicals Ltd., a public sector undertaking at Koyali near Baroda.

Alongwith uptrend in production, the exports of the industry have also improved. From Rs. 8.34 million in 1971-72, the export value increased to Rs. 9.20 million in 1972-73. During the first five months of 1973-74 (April-August 1973), these exports totalled about Rs. 6.32 million. USSR, with an intake worth Rs. 6.26 million, was the principal buyer as in the previous years. Afghanistan, Muscat and Nepal were the other buyers.

RESEARCH AND DEVELOPMENT IN MARINE CHEMICALS

The Central Salt and Marine Chemicals Research Institute (CSMCRI), Bhavnagar, a major research institution engaged in an intensive research on salt for improvement of quality and grades as also in the field of marine chemicals, has to its credit development of different grades and recovery of marine chemicals from sea water and inland saline lakes, desalination of saline waters, solar energy applications and sea water irriculture.

During pre-independence days, salt production in the country was 1.8 million tonnes. After independence, the Government of India initiated vigorous steps to overcome this position by way of research in improvement of quality and yield and by freely licensing new capacity to manufacture salt. Twenty years of extensive industrial research resulted in the phenomenal growth of salt industry with impressive improvement in quality and yield. CSMCRI humbly takes its due share in this achievement. Besides, CSMCRI has also helped in the creation of scientific temper by conducting suitable training courses for the salt manufacturers.

The CSMCRI has been able to develop processes for recovery of marine chemicals, such as, potassium fertilizers, bromine, hydrated calcium, agar-agar (China grass) and magnesium chemicals. Since potassium fertilizers are presently imported, development of processes for the recovery of such fertilizers by the Institute and establishment of its commercial plants will help the Indian economy to save foreign exchange worth Rs. 20 million per year when fully implemented.

Bromine is another industrially useful chemical, present demand of which is largely met with by imports worth Rs. 3 million annually. Know-how of the Institute has helped its commercial production now in the country, eventually to make the nation self-reliant. Hydrated calcium silicate required by insecticide and rubber industries is now manufactured in the country, worth over Rs. 2 million.

Agar-agar (China grass) was entirely imported a few years back. Know-how developed by the Institute has helped set up four commercial plants to produce Agar-agar worth over Rs. 2.5 million per year making the country self-sufficient.

Development of various other processes for the manufacture of free flowing table salt, dairy salt, cattle licks, light and heavy basic magnesium carbonate, magnesium hydroxide, alginates have helped the country in the direction of import substitution, saving substantial foreign exchange.

In the field of desalination of saline waters, the Institute has also made some headway. Know-how for the development of suitable membranes and assembly of the Reverse Osmosis, Electrodialysis Units for desalination was not available in the country until recently. Breakthrough by CSMCRI in developing complete know-how for making membranes and necessary components for these techniques indigenously will help the country establish from portable to large size desalination units for obtaining portable water from brackish waters economically. Know-how for R.O. is released and supplied to certain engineering firms for commercial exploitation.

Tapping the solar energy by CSMCRI, establishment of solar stills at number of places like light houses, laboratories, petrol filling stations will help obtaining good quality water easily and cheaply.

In the field of sea water irriculture, the research projects are envisaged to develop the technology of "Saline hydroponic" by using coastal dune sand as substrate and sea water as irrigant to grow food crops and raw materials for some of the Agro industries. The preliminary experiments with bajra, wheat, sugarbeet and safflower show immense scope for further exploitation of the marine resources for productivity on the coastal regions,

Recent contributions of the CSMCRI include the development of vital know-how for desalination of brackish and sea water. Processes on reverse osmosis, ion-exchange, electrodialysis, flash and solar distillation, developed for the first time in the country, have tremendous scope for exploitation in the arid regions which face perpetual drought,

In recognition of their meritorious work in the field of research and development, the CSMCRI have been awarded prizes by the Invention Promotion Board, New Delhi.

DEVELOPMENT OF MEDICINAL AND AROMATIC PLANTS

Notwithstanding the various regulations intended to restrict country's imports of essential oils, drugs and medicines, the role played by the Central Indian Medicinal Plants Organisation (CIMPO), Lucknow to reduce the import bill for these items deserves special mention.

CIMPO is in fact performing a very vital function in the development, production and extension of medicinal and aromatic plants in the country by :

(a) carrying out research on development of high yielding strains of medicinal and aromatic plants;

(b) developmental and extension work of spreading the cultivation of medicinal and aromatic plants produced by CIMPO in different parts of the country through the help of State Governments, private parties and individuals interested in their production;

(c) arranging the supply of authentic seed and planting materials from its farms to prospective cultivators, and providing them with requisite information and data about their successful cultivation;

(d) working out and demonstrating the technique and economy of production of essential oils and cultivation of medicinal plants to intending growers;

(e) assisting the Government and private industries as well as individuals by supplying them with information and technical guidance regarding source, availability, botanical identification, chemical constituents, cultivation methods, pest control, preservation, storage and marketing etc.;

(f) maintaining liaison between research and industry and giving the latest findings to the industry for further development; and

(g) actually producing in its farms and factories some of those items which would otherwise have been imported.

Due to efforts of CIMPO, several firms of aromatic and medicinal plants have come up in the country and the organisation has on hand an ambitious programme for faster development.

Improvement of medicinal and aromatic plants of economic value by selection and other agro-techniques has resulted in getting strains with higher yield of oil and active principle contents. The significant contributions in this field are Citronella (Java), Palmarosa, Lemongrass and Japanese mint.

Chemical weed control in field crops is an essential operation for getting higher yield of herb and oil. This is one of the most pressing problems in areas where weeding by manual labour is very expensive. Application of terbacil (Sinbar) has been found effective in Japanese mint and peppermint crops and Simazine was found to be useful weed killer in Citronella (Java).

CIMPO is performing an important function by producing items which would otherwise have been imported. For instance, the total requirements of the country with regard to Ergot selerotia, Hyoscyamine and Belladonna folio are met by them fully.

MANUFACTURE OF CEMENT

With a total installed capacity of 19.75 million tonnes per annum, manufacture of cement is undertaken both in the public and the private sectors. Actual production of 51 factories in the line in various parts of the country is estimated at about 15.78 million tonnes per annum. Nearly 65-70 per cent of production is based on wet process.

There has been some diversification in the industry towards the utilisation of alternative raw materials. Blast furnace slag from steel plants in now being used for production of Slag cement. Fly ash, which is an industrial waste from thermal power stations, is being considered for use in the manufacture of Fly ash cement.

Fabrication of cement making machinery for both wet and dry processes is now being undertaken indigenously by 7 firms against specific orders. Their combined potential is equivalent to 7 cement plants per year. The plant sizes supplied are in the range of 600 tonnes and 1000 tonnes per day capacity. The machinery manufacturers are being given the facility of importing certian components for cement machinery.

Having regard to the importance of cement as a basic building material, development of additional capacity, on a continuous basis, is of high priority. Additional capacity so far approved in this field is as follows :

Public Sector	3.80 million tonnes
Private Sector	4.63 million tonnes
Total	8.43 million tonnes

On the basis of firm placement of orders for plant and machinery, a capacity of 2.2 million tonnes, represented by 7 schemes, is presently under implementation. Other schemes accounting for a capacity of over 6 million tonnes are under various stages of progress. In the meantime, further proposals are also under Government's consideration.

The Task Force for Cement Industry has assessed the demand for cement by 1978-79 at 28 million tonnes per annum inclusive of a provision for export of 0 5 million tonnes annually. This level of production would correspond to an intalled capacity of 33 million tonnes on the basis of 85 per cent utilisation of capacity.

STEEL CASTING INDUSTRY

Steel casting industry forms a feeder industry for all engineering industries, such as, railways, automobiles, machine tools, industrial machinery etc. Its growth is, therefore, closely linked with the growth of the engineering industries.

There are 43 commercial steel foundries with a total capacity of 148,000 tonnes per annum. Production during the last two years has averaged around 57,000 tonnes. There has been a fall in demand for general types of steel castings such as those required for railway rolling stock. However, demand for sophisticated and intricate castings including alloy steel castings required for the manufacture of heavy electrical plants, furnaces, fertilizer plants and chemical plants has shown an increasing trend. These castings are required to withstand higher pressures, speeds and temperatures.

The existing steel foundry units which were essentially catering to the above types of castings, mostly for railway, are endeavouring to diversify their production for the manufacture of sophisticated and intricate castings. Having regard to the expansion of industries like automobiles, industrial machinery, machine tools, heavy electrical equipment, the demand for such intricate castings would increase proportionately. There is, therefore, scope for additional capacity in this field. Part of the additional requirements could be met by the existing manufacturers, diversifying in the sophisticated castings. In addition, there is also scope for new units.

The economic size of a steel foundry depends upon a number of factors, such as, extent of modernisation, testing facilities, type of castings proposed for manufacture, product mix, etc. Most of the equipment is available indigenously.

Proposals for foreign collaboration could be considered on merits for manufacture of sophisticated castings.

INDIGENOUS ELECTRIC LOCOMOTIVE DEVELOPED

A high-powered electric locomotive with completely indigenous components has been designed by the Research Organisation of the Indian Railways.

The 3,600 horse power locomotive is under production at Chittaranjan Locomotive Works (West-Bengal).

The Railways' Research, Designs and Standards Organisation (RDSO) is also developing another design of locomotive.

The research activities of Railways have been directed towards evolution of high-efficiency locomotives, new freight wagons and improved passenger coaches to keep pace with the growing transport needs of the country.

Presently, a new general purpose covered wagon, designed by the RDSO is also under production. The wagon is an improvement over the existing ones and has a payload of 27.5 tonnes as against the present 21.7 tonnes.

Special purpose wagons like silo wagons for pulverised goods, covered wagons with sliding walls, fibre glass-reinforced plastic-lined tank wagons and barrels for corrosive fluids, goods brake van for 100 km. per hour speed and improved high speed freight bogies are in various stages of development.

New designs have also been developed for passenger coaches to provide better comfort and more accommodation. An air-conditioned sleeper car with 48 sleeping berths and an air-conditioned sleeper-cum-chair car are also being developed.

INDIAN ASSISTANCE FOR CEMENT PLANT IN NEPAL

India is to set up a cement plant in Nepal on turnkey basis shortly. Under an agreement concluded recently between the two countries, India would bear the entire cost of this plant and would also render technical and financial assistance for construction of road connecting Kathmandu and Dhankuta. Apart from these projects, India has also agreed to assist Nepal to set up a sugar mill and an ancillary engineering plant in that country. The transfer of responsibilities to Nepalese in respect of these projects would take place progressively. Besides these projects, India has also offered to provide all help for setting up Devighat project, yet one more important scheme in Nepal in the field of power development, to enable that country to meet its urgent power requirements.

Representatives of the two countries have also agreed to examine joint collaboration projects for the production of industrial as well as essential goods. They also reaffirmed a decision taken last year, to cooperate in the development of sheep breeding in Nepal.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PAPER FROM JUTE STICKS

National Research and Development Corporation of India offers technical know-how for a process for the manufacture of paper in which jute sticks are utilised as raw materials. Jute sticks which are abundantly available particularly in eastern parts of the country are at present going waste.

The present production of paper in the country is estimated at 0.82 million tonnes as against an estimated consumption of 1.1 million tonnes by the end of the Fifth Five-Year Plan. The existing paper manufacturing units in the country are using bamboo and sabai grass as major raw materials, although bagasse is also being used by some mills. The shortage of cellulosic materials for making pulp came in the way of augmenting paper production in the country. This problem was identified by Forest Research Institute, Dehradun as a result of which the new process for utilizing jute sticks has been developed. This process is simple and semi-chemical and is carried out in two stages. In the first stage, jute sticks in the form of chips are boiled with caustic soda solution. The boiled chips are washed with water to minimise possible alkali contents. In the second stage of the process, the treated chips which become sufficiently soft are mechanically fiberised into pulp. Further processing is the same as in the case of pulp obtained from other raw materials. Besides jute sticks, the process utilises caustic soda, lime chlorine, alum, rosin, fillers, dyes and acid as raw material. All these materials are available in the country. Equipment in this process is the normal pulp and paper making machinery.

The capital investment for a unit with an annual capacity of 3,000 tonnes of writing and printing paper is estimated at Rs. 9.34 million. Since the plant and machinery required in the process are the same, the existing manufacturers can suitably augment their capacity by making use of jute sticks.

The cost of production of paper has been worked out to Rs. 1610 per tonne.

LARGE SIZE SOLAR WATER HEATER DEVELOPED

The Central Building Research Institute (CBRI), Roorkee, has successfully designed and fabricated a large size solar water heater capable of heating 600 litres of water upto 55°C in the winter afternoon and upto 48°C to 50°C in the early mornings. This heater is mainly suitable for large intermittent demands of hot water by hospitals, hostels and kitchens.

The solar unit designed by CBRI can be fabricated easily. It consists of six collectors of sun rays and a heat insulator tank. The absorber consists of an aluminium sheet of 28 gauge blackened on the exposed side and attached to a set of galvanised pipes of 19 mm diameter so as to render a good thermal contact between the tubes and the plates. It is housed in a black cover of heat insulating material and having a glass window on the exposed upper side. This allows sun rays to fall on the blackened plates. The absorber is oriented towards the south at an angle (equal to latitude angle +15°) for winter use. The absorbers are connected in parallel and are connected to the storage tank which is kept at some convenient location. The circulation is made by a small pump (¼ H.P.). The pump operation is controlled by a tiny gadget developed by CBRI. On cloudy days or when the load is more than the design value, an immersion heater is automatically switched on. The power consumed by the pump is about 0.23 kwh per day.

The large size solar heater water has successfully been tested by the CBRI. Such units installed at a military hospital and at the institute itself, have been rendering good service for the last two years. The geyser life is anticipated to be about 15 years with minor maintenance and operation cost. Such units can easily be manufactured from indigenous materials.

PNEUMATIC TEST RIG

A pneumatic test rig for testing pneumatic components like cylinders, valves, pressure gauges, pressure switches and pneumatic seals has been designed, built and commissioned recently by the National Aeronautical Laboratory, Bangalore.

The test-rig consists of a two stage reciprocating compressor, delivering 5 cfm. of free air at 400 psi to an air receiver of 95 gallons capacity. The compressor is driven by a 2 h. p. electric motor. An unloading valve connected to a compressor outlet unloads the compressor at a preset pressure in the range 190-250 psi. A safety blow-off valve, set at 300 psi relieves air pressure in the receiver when it reaches 300 psi. Air passes through a filter which removes solid particles and a lubricator injects fine stream of lubricant into the air flow. The air then passes through a pressure regulator which can be set to any value in the range 0-250 psi, so that the downstream pressure can be kept constant at any required value as directed by the required test conditions. A manually operated 4-way, 3-position direction control valve controls the air flow to a 2″ bore, 24″ stroke double acting, air cylinder which is connected to the load.

DEVELOPMENT OF LIME CONCRETE TAMPING MACHINE

Lime concrete terracing is an effective and inexpensive treatment for thermal insulation and water proofing of flat roofs. Such a treatment gives good results only when the lime concrete is properly and adequately compacted. The normal method of tamping, however, suffers from several drawbacks and the quality of hand tamped terracing has not been upto the mark mainly due to inadequate and non-uniform tamping. Moreover, the normal tamping is becoming more uneconomical with the rising cost of labour.

In order to eliminate such drawbacks, the Central Building Research Institute (CBRI), Roorkee (UP), has developed a lime concrete tamping machine which has proved a more effective means for the compaction.

The salient features of this machine are: prime mover-electric motor of 0.5 H.P.; number of tampers—3; number of blows—1000 per minute; self weight—70 kgs.

approximately; length (excluding handle)—500 mm; width—430 mm; height—300 mm and output—50 sq. metres per hour.

The machine tamped terracing has been found to possess more density and better resistance against water penetration. The machine developed by CBRI has already won National Award. At present, two firms, namely, M/s. M.S.J. (Engineers) & Co., Khanjarpur, Roorkee and M/s. Roorkee Engineering Co., 20, Civil Lines, Roorkee (UP) are manufacturing this machine under licence from the CBRI through the National Research Development Corporation, 61, Ring Road, Lajpat Nagar III, New Delhi-110024.

NEW REFRIGERATED CONTAINER DEVELOPED

M/s. Frick India Ltd., Jeevan Vihar, 3, Parliament Street, P. B. No. 18, New Delhi-1, have developed a refrigerated container which is capable of maintaining a storage temperature upto—20° F. The Unit can be plugged to any source of 220 volts A.C. and has a capacity of about 2.5 tonnes of frozen material. It has been designed for easy loading and unloading from standard six tonne trucks and measures 2.60 Mxl. 82Mx2.13M. Seafood processors and exporters may find these containers useful for transporting frozen seafoods. Frozen materials brought to the ports in such containers need not cause any anxiety in cases of delay in shipment,

INDIA'S HANDLOOM INDUSTRY

Indian textile industry consists broadly of three major sectors, viz. mill sector, powerloom sector and hand loom sector. These sectors employ different levels of technology. In terms of employment potential, the handloom industry is second only to the agriculture industry, providing livelihood for over 7 million people directly and to about 20 million people indirectly. It meets nearly 25 to 30 per cent of the country's requirements of clothing and has, of late, come up as an important foreign exchange earner.

The following table contains the data relating to the targets of production and achievements of the textile industry as a whole during the four Five-Year Plans.

Million Metres

	Target set	Achievements
	Handloom/ Powerloom	Handloom/ Powerloom
First Plan	1700	1700
Second Plan	2500	2592
Third Plan	3500	3530
Fourth Plan	4250	3700 (Anticipated)

It may be added that it is the declared policy of the Government to encourage and develop the decentralised sector of the textile industry, i.e. the handloom and powerloom sectors.

There are nearly three million handlooms in the country. Production on a handloom is about 5 metres per day. Assuming that the three million handloom were to work fully for 300 days in a year, their capacity would be approximately 4500 million metres. Hence the number of installed handlooms in the country is sufficient to achieve the target of production for the handloom sector for the Fifth Plan, viz. 3000 million metres.

With a view to reducing dependence of the majority of the handloom weavers on the master weavers and the money lenders, efforts are being made constantly to organise and strengthen the cooperative movement and other institutional agencies for assisting the weavers so that finance and raw materials may be available to them in adequate quantities at reasonable rates. The programme for the development of the handloom industry, which provides full time employment to over 7 million weavers included in the Five Year Plans was accordingly formulated to assist the weavers cooperative societies in obtaining their requirements of working capital finance from the co-operative banks and for giving grants and loans at concessional rates to cooperative societies for purchasing improved appliances, for organising marketing and re-imbursement of rebate allowed on sale of cloth, etc.

Proper care is being taken at the institutional level for the development of this industry. There were 7 Weavers' Service Centres and 1 Sub-centre and two Institutes of handloom Technology being run by the Central Government at the end of the Third Plan period. The Weavers' Service Centres are located at Bombay (Maharashtra), Madras (Tamilnadu), Indore (Madhya Pradesh), Varanasi (U.P.), Calcutta (West Bengal), Bangalore (Karnataka) and Mangalgiri (since shifted to Vijayawada) (Andhra Pradesh) and the Sub-centre is located at Kanchipuram (Tamilnadu). The Institutes of Handloom Technology function at Varanasi (U.P.) and Salem (Tamilnadu). The main function of the Weavers' Service Centre is to conduct research and impart training to weavers. They also conduct short-term courses in the use of improved looms and advanced techniques of pattern making, dyeing, weaving and finishing. In short, they are mainly responsible for evolving and propagating new designs, equipment and processes. They assist the weavers in solving their technical problems. Five new full-fledged centres and two sub-centres have recently been sanctioned. Of the new centres, one has already started functioning at Cannanore in Kerala while other two centres at Meerut in U.P. and Bhagalpur in Bihar are about to be set up. The remaining two centres to be located in Assam and Haryana and the 2 sub-centres to be located in Jammu and Kashmir and Manipur are also expected to come up during 1974-75. Steps are also being taken to strengthen the existing centres and the institutes of handloom technology so that their services may be available to a larger number of weavers specially in the remote rural areas with greater benefit.

The handloom industry achieved a real break-through in the export field during the Fourth Plan. The exports of handloom goods at the end of the Third Plan period were of the order of Rs. 157.7 million. The estimated achievement at the end of the Fourth Plan period is over Rs. 500 million. Exports of cotton handloom goods increased from Rs. 93.2 million in 1969-70 to Rs. 396.6 million in 1972-73. The main items of exports consist of Bleeding Madras, Real Madras Handkerchiefs, lungies and sarongs, dhoties, sarees, shirtings, carpets and durries, bedsheets and blankets, pillow covers and table cloth towels and napkins and readymade garments. A remarkable achievement in exports has been made in cotton handloom readymade garments, the exports of which jumped from Rs. 12 million in 1969-70 to Rs. 160 million in 1972-73. Indian silk goods also achieved an all time high export level of Rs. 175 million during 1969-70. Though exports declined to Rs. 100 million in 1970-71 and Rs. 71.5 million in 1971-72, there has been a progressive improvement since. The exports during 1973-74 are expected to reach a level of Rs. 130 million to Rs. 140 million.

According to the provisional figures so far available with the Handloom Export Promotion Council, the total exports of handloom textile items amounted to Rs. 283 million during the period April-November 1973 as compared to Rs. 298.9 million reported for the corresponding period of last year. The above figures although tentative indicate the possibility of a good tempo of exports in regard to handloom textile items. Of the above export figures of Rs. 283 million, the share of cotton handloom textile items alone amounted to Rs. 203.1 million compared to Rs. 245.5 million reported for last year. Exports of silk handloom items were encouraging during this period with both mulberry and tassar silk items having been exported by almost 50 per cent more than that reported for last year. It appears that the present good tempo of consumer demand had made inroads in Indian silk items and overseas markets have improved very much placing substantial orders for Indian silk items.

During the period April-November 1973, export earnings of Bleeding Madras fabrics amounted to Rs. 14.9 million as against Rs. 1.04 million reported for last year. Export of Real Madras Handkerchiefs aggregated to Rs. 33.8 million during the eight months period of 1973 as compared to Rs. 24.6 million last year. Quantitatively, nearly 0.6 million metres have been exported more during this period. This single item of handloom fabrics earned nearly a third of the total foreign exchange. Exports of lungies and sarongs, however, recorded a decrease.

Exports of dhoties to traditional outlets during April-November 1973 matched up well with their performance reported for last year with nearly Rs. 0.6 million worth. The booming demand for handloom fabric items created fresh interest in shirtings and other fabric items, such as, crepe, denim, casement, etc. As against an export of Rs. 44.7 million during 1972 exports during the period under review amounted to Rs. 58.2 million.

Mulberry silk items were exported to the tune of Rs. 42.3 million and tassar silk for Rs. 8 million during April-November 1972. As against these figures, during the corresponding period of 1973 exports of mulberry silk items amounted to Rs. 66.6 million and that of tassar silk items earned Rs. 12.5 million. A significant feature of the exports of handloom goods during the Fourth Plan period has been the opening up of the sophisticated markets of America and Europe.

While Indian handloom fabrics were allowed to be imported into U.S.A., freely, handloom made-ups (including garments) were subject to quota restrictions. Till 1970, there was a common quota for mill and handloom made-ups. A separate quota for cotton made-ups was fixed for the first time under the Indo-U.S. Cotton Textile Trade Agreement entered into in 1970. This agreement also provided for quota free import into U.S.A., of 'India Items' which mostly included embroidered cotton goods. The progressive dialogue with the U.S. authorities has resulted in the quota free exports of all cotton handloom goods to U.S.A. from the 1st January, 1974. In regard to the European Common Market countries, the annual quota for cotton handloom fabrics and silk handloom fabrics has been increased recently from $ 1 million to $ 2 million each. Other handloom goods have been covered under the Generalised Scheme of Preferences under which duty free import of limited quantities for all types of textiles is allowed. Quota free imports have also been allowed by certain other European countries such as Switzerland.

In the strategy for increasing exports in the handloom sector, overseas marketing intelligence and feed back of technical information regarding consumer preferences is very important. The Handloom Export Promotion Council sends out delegations and study teams periodically to study overseas markets in the various regions. It has also been participating regularly in trade fairs and exhibitions abroad. The Handicrafts and Handloom Export Corporation and the All India Handloom Fabrics Cooperative Marketing Society Ltd., Bombay, both of which operate on All-India basis, have also been making a significant contribution in the export field. They have opened offices in several countries abroad. The Handloom Export Promotion Council and the Handicrafts and Handloom Export Corporation as well as the All India Handloom Fabrics and Marketing Cooperative Society Ltd., are in conjunction with the active assistance of the Weavers Service Centres, also trying to organise and develop a suitable production base for the exports of handloom goods.

Handloom products represent the creative genius of the Indian weaver whose skill is a continued heritage of many generations. They symbolise the best traditions of India's ancient culture with an imperishable and irresistible appeal even to the most sophisticated people. They are distinctive in design, colour combinations and craftsmanship. Indian handlooms have, therefore, survived despite the on-slaught of the mill sector, and more recently, also of the powerloom sector. With new trends in fashions and designs, it is no wonder that handloom products are becoming popular all over the world.

The Approach Paper to India's Fifth Plan emphasises that high priority should be given to programmmes which provide maximum employment and are aimed at raising the income levels of those sectors of society, especially in the rural areas, which are at present below the poverty lines. In order to achieve these objectives it has been decided that special attention be paid to the development of the handloom sector in the Fifth Plan period. As handloom products have an irresistible appeal, it is expected that the Indian handloom industry may become a vibrant force in the years to come. ☐

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EXPORT SUCCESS OF A STEEL STRUCTURAL FIRM

India's steel structural industry is making significant strides in production as well as exports. A variety of finished steel structural items find their way to overseas markets. These include steel towers, beams and channels, tubular poles for electric lines, doors and windows, other structurals and structural parts. A number of markets import these structurals from India in which Iran, Thailand, Libya, U.S.A., Sudan, Kenya, Kuwait and U.S.S.R. are significant. Despite keen competition from advanced countries, the industry has been able to improve its export turnover because of its strict adherence to clients' specifications in materials, workmanship and delivery schedules.

M/s. Kamani Engineering Corporation, Nichol Road, Ballard Estate, Bombay, leading manufacturers of steel structurals in India achieved a major breakthrough in export during 1972-73. The firm's export turnover exceeded the Rs. 100 million mark (Rs. 103 million) during the year as against Rs. 72 million in 1971-72 and Rs. 89 million in 1970-71. For the export achievement in 1972-73, the firm was given an award by the Indian Merchants' Chamber. The firm has active plans to step up its exports at a rate of 10 per cent per annum. Having about two dozen countries in its list of export destinations, the firm has to its credit several national export awards declared by the Federation of Indian Chambers of Commerce and Industry (FICCI) as also panel shields from the Engineering Export Promotion Council.

Currently, the firm is engaged in a number of turnkey assignments abroad in the field of power transmission valued at Rs. 170 million, it is learnt. It has already fabricated more than 400,000 tonnes of transmission line towers and erected 11,000 K.W. of lines.

The Bombay firm has two manufacturing units located at Bombay and Jaipur having a combined production capacity of 60,000 tonnes. At domestic level also the firm is accepting offers for turnkey assignments in the field and presently has on hand two assignments of a sizeable value received from the State Electricity Board. The firm has so far secured several orders from a number of developed and developing countries. However, the orders it secured from Iran, Thailand and Libya in recent years are significant as these were bagged by it against competition from renowned firms in Italy, Yugoslavia, Japan, United States, United Kingdom and Federal Republic of Germany on the basis of global tenders.

Besides transmission line towers, the firm's export range covers power conductors, brass strips and rods, red lead, zinc oxide, reclaim rubber, electric transformers, steel tubes, dyes and chemicals, stainless steel utensils, processed foods, marine products, agarbattis and handicrafts. It has active plans to expand the installed capacity for transmission line towers from the present level of 60,000 tonnes to 100,000 tonnes shortly.

India's heavy steel structural industry is included in the priority sector having in all 24 units in its infrastructure. Of these, 3 units are in the public sector and the rest are in the private sector. Of the licensed/registered capacity of 190,000 tonnes, cent per cent is installed. The industry's total production in 1972 was estimated at 55,000 tonnes as against the actual production of 42,000 tonnes in 1971. The Government of India follows liberal licensing policy in this line of manufacture. Foreign collaboration is considered on merits for specialised items. Import of structurals is totally banned. Steel, an essential raw material, is available indigenously while plates are imported partially.

INDIAN DIESEL ENGINES TO UNITED KINGDOM

A sizeable order for the supply of 1500 diesel engines has been recently secured by M/s. Kirlosker Oil Engines Limited, Kirkee, Poona, Maharashtra from original equipment manufacturers of the United Kingdom. Being completely satisfied with the performance of 18 diesel engines supplied by the Poona firm on trial basis to the British firms before two months, the massive order was placed immediately. The Poona firm is expected to airlift about 180 to 200 engines in the month of April.

With the conclusion of this contract, the firm has made a major breakthrough in the United Kingdom and also in European Economic Community for diesel engines. Uptill now, the Company's exports of diesel engines were confined to only developing countries and to some of the Latin American and European countries. For the past two decades, the firm was endeavouring persistently to build up market in U. K. and Europe for diesel engines in the face of stiff international competition. Following this contract, more orders are expected to be placed by the British firms for engines. The Indian firm has invited its British counterparts to visit its manufacturing plants located at Bangalore,

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Harihar, Kirloskarwadi and Poona so as to ascertain themselves of the technical capability and efficiency achieved by it in the manufacture of these engines. The firm is hopeful of strengthening market in the U.K. and Europe because of its worldwide network of distribution, supply of spares and components and locally-based after-sales service.

The firm is one of the well established manufacturers of oil engines in India. Its production profile today covers a variety of oil engines and ancillaries and parts. Broadly, its manufacturing range includes diesel engines ranging from 3 to 440 BHP for industrial, marine and agricultural purposes. It also manufactures thin-walled metal bearings and bushes for stationary and automotive type of diesel engines. The firm is manufacturing diesel engines in technical collaboration with four foreign firms in the line.

Included in the priority sector, India's diesel engines industry has 27 units in its infrastructure. Of these, one is in the public sector and the rest are in the private sector. The licensed capacity is of the order of 265,000 numbers while the installed capacity is placed at 192,000 numbers. In the organised sector, the production during 1972 was estimated at 70,000 numbers. The industrial policy in the line encourages open licensing. However, foreign collaboration is considered on merits. Excepting a few components, most of the raw materials are available indigenously. The industry has achieved almost cent per cent import substitution in the manufacture of vertical engines below 15 HP and horizontal engines below 50 HP. Of the total production, about 90 per cent is in the small HP range (below 15 HP).

LARGE EXPORT ORDERS FOR CABLES AND WIRES

A series of export orders bagged by the Indian firms for a variety of cables and wires against global tenders in recent years amply prove of the technical expertise and technological skill achieved by India's cables and wires industry in this line of manufacture. Alongwith the large and medium scale units, quite a few small scale firms in the line have also come forward to prove their mite in securing even big export contracts floated against international tenders. With increased production, the industry, in recent years, has indeed been able to improve its export performance in terms of value and quantum from year to year.

Strengthening the export uptrend of the wires and cables industry, M/s. Consortium of Indian Cable Manufacturers have recently bagged a massive export order from the Government of Kuwait for aluminium cables valued at about Rs. 25 million. Interestingly, the order was won by the Consortium against the global tender floated by the Iraqi Government. A few month ago, M/s. Remsons Cables Private Limited, Bombay, a small scale unit in the line, was able to bag a sizeable order for control cables from Greece against stiff International competition. The firm's export success deserves special mention viewed against the background that the firm achieved the contract against competition from a number of developed countries like Japan and Italy. It is to the credit of the firm to have on its export list the advanced countries, such as, U.S.A. and Canada as customers.

The wires and cables industry is already supplying a variety of cables to USSR, Iran, Sri Lanka, Federal Republic of Germany, Qatar, Arab Republic of Egypt, Sudan, Tanzania, Kuwait, Thailand, Singapore and Hong Kong. In 1972-73, the industry's foreign exchange earning totalled Rs. 126 million which was higher as compared to the earning in the preceding year at Rs. 112.50 million. Alongside increasing production, the industry is progressively endeavouring to increase indigenous content in manufacture of quite a few varieties of cables and wires.

FERRO-MANGANESE TO WORLD MARKETS

Endowed with vast mineral resources, India today commands a high position in the world community as a significant manufacturer and supplier of a variety of minerals. For instance, manganese ore, an essential mineral required for industrial development, is explored in India in such a large quantity that apart from meeting the home demand a sizeable portion of the production is supplied abroad. In 1972-73, India's exports of manganese ore totalled Rs. 86.70 million. In terms of quantity about 0.83 million tonnes were supplied abroad. In fact, exports during the preceding year were much higher which earned Rs. 117 million through overseas supply of 1.19 million tonnes. Today, India ranks fourth among the largest exporters in the world. Japan constitutes the largest single buying country for Indian manganese ore which alone accounts for over 75 per cent of the total Indian supplies every year. Apart from Japan, Canada, Belgium, Korea Republic and France are amongst the other buyers.

M/s. Khandelwal Ferro Alloys Limited, 166, Dadabhai Naoroji Road, Bomby-1 one of the prominent explorers of manganese ore in the country have on hand export orders for ferro manganese to the tune of Rs. 14 million to be executed during 1974. Apart from these, they have also secured export orders for ferro manganese slag at a value of Rs. 1.3 million which await shipments during the current year.

Besides ferro manganese, the Bombay firm is engaged in manufacture of steel tubes also. Their exports of both the items during 1972 were of the order of Rs. 25 million.

The installed capacity of the firm in the area of ferro manganese is placed at 37,000 tonnes while for steel tubes it is placed at 400,000 tonnes. In the preceding year, its value of production was of the order of Rs. 116.6 million.

A number of developing countries which were the bulk importers of manganese ore a few years back, have now commenced their own production and in recent years have emerged as leading exporters. Consequently, the share of developing countries in global exports which was of the order of 43 per cent in 1957 came down to 38 per cent in 1969 while that of the developed countries increased from 16 per cent in 1950 to 22 per cent in 1969. A structural change in the pattern of Indian exports was also witnessed in the recent years. For example, India's traditional buyers, such as, U.S.A. and U.K. were replaced by Japan. India is still in a position to maintain its share in the global exports at 13 per cent.

Owing to the rapid pace of industrial development in the country, the domestic demand for this mineral has grown sizeably. Keeping in view this aspect, the Government of India applied restrictions from April 1973 on the export of manganese ore. The export of higher grade is discouraged as compared to the low grade ore. The country's total production of ore is estimated at 1.6 to 1.7 million tonnes per annum.

EXPANDING DEMAND FOR SILK GOODS

Indian silk goods have created a niche in the overseas markets. Their exports during January-November, 1973 amounted to Rs. 103 million as against Rs. 67 million in the corresponding period of the preceding year, recording an increase of 53 per cent. The growth in exports is due to the steady increase in the demand for all varieties of handloom silk goods. In particular, the demand for dress-materials has gone up. Their foreign exchange earnings in the period amounted to Rs. 33 million as against Rs. 20 million in the corresponding period of 1972.

Complementing to this growth in exports of silk goods, M/s. Radha Silk Emporium, Sannadhi Street, Post Box No. 622, Mylapore Madras, manufacturers and exporters of silk fabrics earned Rs. 4.42 million in foreign exchange during the first nine months of 1973-74 (April-December). As compared to this, their export earnings during the whole year of 1972-73 aggregated Rs. 3.56 million. The firm has good orders in hand for the year 1974.

The range of products exported by the firm are silk fabrics, made-up garments, handloom cotton fabrics, handicrafts, agarbattis and leather chappals. Major destinations of firm's exports are U.S.A., Scandinavian countries, Australia, Singapore, Holland, Federal Republic of Germany, Japan, France, Italy, etc.

M/s. Radha Silk Emporium entered into export trade in 1959 is now a recognised Export House. It has more than 40 years manufacturing experience in silk and cotton fabrics. The pieces that are exported by the firm are woven under strict supervision and are quality controlled at every stage of manufacturing/finishing.

Indian silk and silk goods have been in good demand overseas. Their exports accounted to Rs. 83 million in 1972-73 as compared to Rs. 71.20 million in 1971-72. The important destinations were Federal Republic of Germany, U.S.A., Japan, Malaysia Singapore, U.K., Italy, etc.

EXPORT PERFORMANCE AND POTENTIAL

INDIAN ELECTRONICS

EXPORT POTENTIAL

Electronics industry plays a key role in modern science and technology. But for it, travel in air and space would not have been possible. The industry has also boosted exploration of new deposits of minerals and better metallurgical practices. Almost all control instruments used for control of processes in the industry have an electronic base.

In India, the growth rate in the industry has been phenomenal during the Sixties. From a mere assembly of radios with all imported components in the Fifties, today the industry boasts of making quite a wide range of electronic products including consumer electronics, industrial, medical, process control, tele-communication equipment, data processing and computers and measuring instruments, besides components.

The industry in India is spread over hundreds of units in the private and public sectors. The major centres are Bombay, Poona, Hyderabad, Bangalore, Delhi, Calcutta, Madras, Ahmedabad and Ghaziabad. A steady rise of 20 to 25 per cent was recorded in the industry over the past few years. From a bare assembly of 4000 radio sets a few years ago, today the production of the industry is of the order of five million radio sets, 200,000 T.V. sets, tape recorders, tele-communication and public address systems and a wide range of components to meet the demand of the industry. India's production of electronics for 1972-73 has been around Rs. 2250 million of which components alone accounted for Rs. 435 million. With the existing technological facilities it is possible to achieve an annual expansion rate of 100 per cent. With the maximisation of production, the Indian electronic products can be very competitive. India has, therefore, great opportunity, potentiality and capacity for building up its exports on sound lines.

The Government of India and various agencies connected with export promotion, such as, Trade Development Authority and Engineering Export Promotion Council, extend full support to establish export orinted electronic units in India. Marketing possibilities for Indian electronic products in developed and developing countries are very bright. The labour-oriented production on a mass scale, gives an edge to the Indian industry over the other countries to set up a mark in the export market. A wide base for the electronic component industry already exists in India.

The U.S. market is the biggest for all electronic items. The U.S. forecast for electronic sales for 1975 has been estimated at $ 33,000 million (Rs. 248,000 million) of which consumer electronics have been estimated at $ 4,750 million (Rs. 35,000 million). The Federal Republic of Germany market for electronics for 1975 is estimated at DM 34,000 (Rs. 76,000 million). U.K. another big market is likely to consume about £ 1400 million (Rs. 25,200) worth of electronics. The demand in these countries is rising at a rate of 12-15 per cent per annum.

Already India has made a bold beginning in exporting electronic components to developed countries. These components can claim international standards in respect of price, quality and service. The annual export performance of the industry is around Rs. 60 million. The export range includes television broadcast receivers and parts, radio broadcast receivers, transistor receiver sets, telegraph apparatus and instruments and parts, microphones, loudspeakers, amplifiers, microphone parts, television cameras, wireless reception with transmitting apparatus and transmission reception apparatus parts and other electronic items.

U.K., Sudan, Netherlands, Arab Republic of Egypt, Bangladesh, Ireland, Dubai, Bulgaria, Ethiopia, Nigeria and Thailand are the leading destinations.

Many research institutions in India engaged in research and development of electronic items, contribute sizeably to the development of the industry. The recent trend towards self-reliance can be attributed towards the greater contribution of scientists and research engineers in the field. For the first time in the country, the know-how for T.V. production was developed for commercial exploitation by Central Electronics Engineering Research Institute (CEERI).

The Government of India have set up Electronic Commission which reviews the development of electronics industry with regard to research, development and industrial operations with full authority to formulate policies in the field with a view to enable the industry to achieve self-sufficiency. The Department of Electronics, the executive wing of the Electronic Commission, is consistently endeavouring to achieve this goal.

MORE FOREIGN EXCHANGE FROM PLYWOOD AND PLYWOOD PRODUCTS

Plywood and plywood products including wooden furniture and wood and cork manufactures earned Rs. 16.93 million in 1972-73. During the first eight months of 1973-74 (April-November 1973), the export of various items in this group fetched Rs. 18.36 million as against Rs. 11.32 million in the corresponding period of 1972-73. The target of Rs. 21 million set for the industry for the year 1973-74 is well within the vicinity.

Itemwise, the exports of plywood and plywood products fetched Rs. 12.15 million during April-November 1973 as compared to Rs. 7.53 million in the corresponding period of 1972-73 and Rs. 7.47 million in 1971-72. Hardboard of wood fibre is another item which registered growth to Rs. 4.36 million in 1973-74 (April–November 1973) as against Rs. 1.16 million in 1972-73 (April-November 1972). Wood products excluding wooden artware showed a marginal decline during the first eight months of 1973-74. Its exports earned Rs. 1.07 million as against Rs. 1.39 million in the corresponding period of 1972-73. In the first eight months of 1971-72, however, the exports of this item amounted to Rs. 1.20 million. Cork and cork products showed a moderate rise during the period under review.

Exports of plywood and plywood products were directed to Iraq, Kuwait, Qatar, U.K., Bahrein, Muscat, Netherlands, Oman, Kenya, Sri Lanka, Abu Dhabi, Saudi Arabia, Sudan, Saudi Arabia, U.S.A., Arab Republic of Egypt and Iran.

TRADE AND ECONOMIC COOPERATION BETWEEN INDIA AND TANZANIA

Trade between India and Tanzania has grown over the years. While India's exports in 1972-73 were of the order of Rs. 30.1 million, imports on the other hand totalled Rs. 270.2 million. In 1971-72, India's exports were to the tune of Rs. 41.4 million and imports at a value of Rs. 184.7 million. Major items of exports from India to Tanzania are medicinal and pharmaceutical products, paper, paperboard and manufactures, jute manufactures, iron and steel, manufacture of metals, machinery (other than electric), electric machinery, apparatus and appliances, transport equipment, developed cinematographic films, cotton piecegoods, etc. India's imports consist of mostly raw cashewnuts, sisal fibre, wattle extract, pearls and precious and semi-precious stones (worked and unworked).

Bonds of industrial cooperation between India and Tanzania of late have been strengthened. India is helping Tanzania in the setting up of small scale industries, industrial estates, etc. Assistance may also be rendered by India in the field of oil industry, coal industry, agricultural research and textile industry.

National Industrial Development Corporation of India have entered into five year technical assistance agreement with National Development Corporation of Tanzania and have already undertaken feasibility study for the manufacture of machine tools, agricultural machinery and farm implements, etc.

EXPORT OF NATURAL RUBBER

In May, 1973, the Government of India decided to allow export of 500 tonnes of natural rubber through the State Trading Corporation of India. The S.T.C. have exported during 1973-74, 2,145 tonnes of natural rubber of the value of Rs. 11.9 million. Japan, Italy, West Germany, France and Singapore were the main buyers.

MINERAL EXPORTS

Amongst the minerals exported from India, iron ore is the largest foreign exchange earner and accounted for about 80 per cent of the total value of mineral exports during 1972-73, During this year, exports of iron ore totalled 20.6 million tonnes and fetched Rs. 1098 million as compared to 19.9 million tonnes valued at Rs. 1040 million in the preceding year. During the first five months of 1973-74 (April-August 1973), these exports were of the order of 8.13 million tonnes valued at Rs. 459.20 million. A target of 25 million tonnes at a value of about Rs. 1270 million has been fixed for 1974-75.

The major importer of Indian iron ore is Japan. Next in importance are Czechoslovakia, Rumania, Poland and Hungary. Of late, Minerals and Metals Trading Corporation (MMTC) has made a breakthrough in the West European markets as well. For instance, MMTC has been successful in getting orders for about 1.6 million tonnes of various grades of iron ore from West European countries.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

DIAMOND INDUSTRY

A REVIEW

India has earned reputation at an international level as a home of famous diamonds. 'Kohinoor', the historic diamond produced in the country, had been the centre of attraction all over the world. The art of diamond making is not new to India. Until the first quarter of 18th century, India was the only diamond producing country in the world. Endowed with the traditional skill of cutting diamonds artistically, Indians engaged in the field spared no pains to develop the industry in the country. A highly labour intensive, the diamond sector of the Gem and Jewellery industry has indeed carved a place for itself among the export oriented industries of the country. Today, the industry accounts for the lion's share in the overall foreign exchange earning of the entire Gem and Jewellery industry.

Golconda diamond mines, once known all the world over for high quality diamonds, although exhausted, the other mines, such as, Panna in Madhya Pradesh and Wajra Karur fields in Andhra Pradesh provide diamonds of gem quality for industrial use. The diamond deposits at Panna mines have been estimated at about 3 million carats. The diamond industry's total production during 1970-71 was of the order of about 19,000 carats as compared to 15,470 carats in 1969-70. During 1968-69, it was of the order of only 7,450 carats.

With a view to boost production of diamonds, the diamond mining project at Panna in Madhya Pradesh is currently operating two schemes–one at Ram Kheria for output of nearly 11,250 carats and the other at Majhgavan for an annual output of 12,000 carats. The latter project is intended to expand the production capacity to 45,000 carats eventually. Apart from this, a new belt–180 meter in diameter has been located near Majhgavan. In Andhra Pradesh, the diamond investigations commenced in mid–1968 and were till recently confined to the conglomerate deposits in Kurnool district. In addition to these projects, some area in Anantpur district has also been taken up for development.

Diamond cutting and polishing industry which had its origin at Panna and Varanasi earlier, has now shifted to Surat and Navsari in the Gujarat State. Today, these centres with the help of thousands of skilled inexpensive labour are engaged in cutting and polishing rough diamonds not only for home consumption but also for overseas buyers. The industry employing about 25,000 workmen, offers a large variety of cut and polished diamonds in various shapes and sizes. The diamond cutters of Varanasi which are specialised in 'Villandi cut' were able to develop overseas markets, such as, Iran and some West Asian markets because of enormous popularity enjoyed by the 'cut' in these countries. Surat, Navsari and Bombay centres mainly specialised in single cuts, brilliant cuts, baguette and marquise and also process other fancy cuts.

The National Minerals Development Corporation (NMDC) are instrumental in further improving the production of diamond industry. They are exploring indigenous sources of diamonds and gem stones. Apart from this, the Gem and Jewellery Export Promotion Council, Bombay have also a series of programmes on hand to boost production and exports of diamonds among other precious stones. The Council's scheme to set up an institution at Surat for training artisans in the latest techniques of cutting and polishing diamonds, is under progress. The Council is also endeavouring successfully to arrange for consistent supplies of rough diamonds of standard qualities to domestic producers direct from the Diamond Trading Company of London. Rough diamonds are imported in the country by the National Minerals Development Corporation for providing raw materials to the artisans engaged in cutting and polishing of diamonds for the purpose of re-export in finished form.

Despite the various development scheme under operation, indigenous production of rough diamonds is not enongh to meet the needs of the industry. However, a large quantum of rough diamonds are imported into the country annually. For example, during 1972-73, the country imported rough diamonds to the tune of Rs. 359 million. UK, Belgium Congo Democratic Republic, Tanzania and Ghana are prominent exporting countries to India.

Ranking prominently among the export oriented sectors of Indian economy, the diamond industry contributes in growing volume to the country's foreign exchange earning. For instance, during 1972-73, the industry earned foreign exchange at a value of Rs. 625.25 million which accounted for about 80 per cent of the entire export value of the Gem and Jewellery sector. In fact, the exports rose from only Rs. 18 million in 1964-65, Rs. 260 million in 1969-70, Rs. 280 million in 1970-71 and Rs. 367.40 million in 1971-72.

Belgium is the largest single buyer of Indian diamonds. During 1972-73, its purchases were valued at Rs. 152.20 million. U.S.A., the next important market, bought worth Rs. 138.45 million, followed by Hong Hong at Rs. 110.80 million, Japan at Rs. 53.30 million, Netherlands Rs. 41 30 million, U.K. Rs. 36.30 million and Israel Rs. 23.68 million

During the first five months of 1973-74 (April-August 1973), in the total foreign exchange earning of the Gem and Jewellery industry at Rs. 361.60 million, the share of diamonds alone was of the order of nearly Rs. 224.68 million. U.S.A., Hong Hong, Belgium, U.K., Netherlands, Israel, Singapore and France were the significant importers.

PRODUCTION OF STEEL FILES

There are 5 units manufacturing steel files with a total licensed capacity of 742,000 dozens per annum. The production of steel files for the last two years has averaged about 1.18 million dozens per year. For two of the existing units in production, letters of intent have been given for substantial expansion for an additional capacity of 568,000 dozens.

Steel files are emerging as promising foreign exchange earning tools where the indigenous manufacturers have made a substantial headway in the export market. During 1971-72, the exports were of the order of 0.54 million dozens valued at Rs. 8.4 million. In fact, proposals from some of the existing units are based on substantial export performance. In so far as imports are concerned, these are limited to very specialised types like jewellers' files the annual imports being of the order of Rs. 0.2 million.

The Working Group on Cutting Tools and Small Tools have estimated the demand for steel files at 36 million numbers (3 million dozens) by 1978-79. In assessing this demand, the Working Group has been guided by the large export potential for these products. Approximately, 50 per cent of the demand is meant for exports.

Although there is scope for establishment of additional capacity in this field, new enterpreneurs would be well advised to assess their ability to enter into the export market in a big way, as the production to be established may have to be based on export requirements. The internal demand by itself may not offer much of scope. In so far as machinery is concerned, most of the critical equipment are not available indigenously. However, if designs of these machines are made available, these could be got manufactured within the country. The raw materials required are high carbon steel and alloy steel. Some of these have been developed by indigenous steel producers.

Know-how for the manufacture of steel files is available within the country except for jewellers' files of high precision nature. Foreign collaboration for these specialised files could be considered on merits.

MANUFACTURE OF ALUMINIUM FLUORIDE

There are two factories, with a total installed capacity of 2,500 tonnes per annum, engaged in the manufacture of aluminium fluoride. Annual production amounts to 2,900 tonnes, representing a high level of utilisation of installed capacity. The entire production is obtained from the processing of acid grade natural fluorspar.

An additional capacity of 25,560 tonnes has been approved in this field. Of this, 11,010 tonnes would be based on processing of acid grade natural fluorspar, and the rest based on the process for recovery of fluoride compounds from rock phosphate used in the manufacture of single superphosphatic fertilisers.

The schemes approved in this field for additional capacity are in various stages of progress.

WAGON BUILDING INDUSTRY

Wagon building industry is one of the earliest engineering industries to be set up in the country. The industry is capable of manufacturing various types of wagons depending on orders, such as, open type, closed type, 4-wheelers, 8-wheelers, etc. Wagon builders are also engaged by and large in another industry, such as, structurals, steel forgings, etc. Government have taken steps to boost export orders and quite a few of the wagon builders are manufacturing wagons for export.

There are in all 16 units producing wagons, two in the public sector and 14 in the private sector. The installed capacity is 33,869 numbers in terms of 4-wheelers. Production of railway wagons in 1972-73 was of the order of 11,000 numbers. There is no foreign collaboration allowed at persent in this industry. So far as exports are concerned, they were of the value of Rs. 23.85 million in 1972-73. Main purchasers of railway wagons were Ghana, Hungary, Iran, Kenya, Poland and Yugoslavia.

Steel sections, wheel sets, axle boxes with the roller bearings, coil springs, leaf springs, air brake equipment, steel castings, etc. are the main raw materials used in the manufacture of railway wagons. Main imported items are industrial steel sections. It is expected that when the steel availability improves in the Fifth Five-Year Plan, the imported content will become negligible.

STEADY IMPROVEMENT IN WIRE ROPES

The wire rope industry in India is a product of early Fifties when wire ropes manufactured were of simple constructions required by engineering and shipping industries as also ropes needed for haulage of heavy machines. From the middle of 1960, however, the industry has endeavoured to develop the techniques of manufacturing all types of ropes including flattered strand ropes, spiral ropes, half lock and locked coil ropes.

In a short span of two decades, the wire rope industry has attained maturity both in quality and in variety. India's first wire rope factory was started in 1953, followed by another 2 units in 1957. At present in the organised sector, 9 units are engaged in the manufacture of wire ropes, with a licensed/registered capacity of 45,060 tonnes. Additional capacity to the tune of 11,000 tonnes was approved by 1973.

Production in the wire rope industry has been steadily increasing from 13,346 tonnes in 1967 to 20,000 tonnes in 1972. During the 7-months period (January-July, 1973), the production was of the order of 10,557 tonnes showing a marginal decline of 3 per cent over the corresponding period in 1972.

The industry entered the export market on a modest scale but it has made rapid strides in recent years. The year 1971-72 was significant for the wire rope industry where its exports touched the Rs. 18.5 million mark. The quantity exported during that year was 7388 tonnes including 4785 tonnes of black wire ropes and 2603 tonnes of galvanized variety. During 1972-73, however, the exports declined in terms of quantity (4913 tonnes) as well as value (Rs. 16.1 million). Exports during 5 months (April-August 1973) were of the order of Rs. 6.9 million. Galvanized variety accounted for Rs. 4.6 million.

Indian wire ropes are exported to as many as 30 countries in the world. The main buyers are Yugoslavia, U.S.S.R., U.S.A., Democratic People's Republic of Korea, Dubai, Ecuador, Bangladesh, Thailand, Hong Kong and Iran.

The industry is listed in the 'priority' list and a liberalised licensing policy is followed. Foreign collaboration proposals are considered for bicable ropeways on merits. The import of wire ropes upto 350 meters is not ordinarily permitted. However, provision exists for import by actual users for mines on restricted basis.

NEW CAPACITOR DEVELOPED

Contributing actively to the development and sophistication of heavy electrical industry in India, the Bharat Heavy Electricals (BHEL), Bhopal, a public sector undertaking has developed a new basic unit of 20/25 kV AR, 400 Volts, 50 Hz capacitor which could be connected on the lines through switch-fuse units.

Installation of power capacitors on the low tension distribution system is a very effective way of improving power factor of the system and thereby reducing the losses. With this end in view, the LT capacitor has been developed at Bhopal.

This capacitor has special feature to withstand outdoor weather conditions and also the voltage variation that normally occur in the system. The addition of switch-fuse unit makes the schemes simpler for direct connection.

The switch-fuse unit is a combination of quick make and quick break triple pole switches and HRC fuses. Switches are selected with adequate rating for making and breaking capacitive current. The HRC fuse has a feature which provides a visible indication when the fuse is blown off.

20/25 kV AR units can also be made into bank formation with 2,3 and 4 units in parallel with suitable rating of switch-fuse units.

BHEL, Bhopal, has also developed an automatic switching arrangement which can connect and disconnect capacitors to the system, as and when required.

TREND IN TEXTILE MACHINERY PRODUCTION

Among a wide spectrum of industrial machinery produced in India, textile machinery occupies a place of its own. Currently, the installed capacity of the industry stands at Rs. 1170 million per annum. Of this, the share of spinning machinery alone comes to Rs. 780 million while weaving and processing machinery account for Rs. 200 million and Rs. 120 million. The contribution of woollen machinery to the total capacity of the industry add up to only Rs. 20 million.

In terms of spindleage and loomage, the installed capacity was 18.2 million spindles and 2,08,000 looms at the commencement of the Fourth Five-Year Plan (1969-70 to 1973-74). The Fifth Plan provides for expansion of the industry by 5.8 million spindles and 85,510 looms. The installed capacity is thus expected to attain a level of 24 million spindles and 2,93,510 looms by the end of 1978-79.

The trend in actual production of the industry has also been on the whole encouraging in recent years. The value of production which was of the order of Rs. 200 million in 1969, rose to Rs. 302 million in 1970 and Rs. 360 million in 1971. However, there was a setback in 1972 when the output declined to Rs. 300 million.

The broad range of textile machinery manufactured in India includes full requirements of the preparatory and spinning departments of textiles from blow room lines to carding engines and from high speed draw frames, fly frames and ring frames to doublers. Automatic looms of various designs constitute an intergal part of the production. The industry also produces pirn winders and cone winders, sizing machines and power looms. Almost all the wet processing machines required by the textile mills are manufactured in sizeable quantity. The industry has also built adequate expertise in the context of ancillary production. The ancillaries include hydraulic, electronic, electrical, temperature and other process control equipment and drive elements.

Alongwith the growth and diversified range of production, the industry has made appreciable headway in the export field also. These exports were hardly Rs. 11.5 million in 1968 but rose sizeably to a level of Rs. 43.26 million in 1972-73. During the first five months of 1973-74 (April-August 73), the exports earned nearly Rs. 14 million. The mojor variety supplied abroad relates to spinning ring frames which were supplied mainly to Arab Republic of Egypt. Processing machines for textile fibres (other than synthetic fibre) were also active in export trade. The leading purchasers for this item included Libya and Sudan. Knitting machines, textile driving machines and a host of accessories of textile machinery have also been equally active in the export field.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PROCESS FOR BLEACHING SYNTHETIC TANNING MATERIALS

The Central Leather Research Institute (CLRI), Adiyar, Madras, has successfully developed a process for bleaching synthetic tanning materials.

The syntans when heated for an hour with a mixture of chemicals, which are easily available, give the bleached product. This bleaching process improves the quality of the product and in turn the tanned leather, giving them light pastel shades. The bleaching is very quick but at the same time it does not change the characteristics and properties of the product on ageing. The process is not only useful for tanning materials of phenolic and napthalene type but also could be effectively used in the bleaching of vegetable tanning extracts.

The process has been developed on laboratory scale on 2 to 2.5 kgs. batches with reproduceable results. The process does not need any capital investment, as this is only an intermediate step in the manufacture of syntans by way of which the manufacturers of syntans can improve the quality of their product. The introduction of bleaching operation during manufacture of syntans would, no doubt, increase the cost of production of syntans but this would be offset by enhancement of quality and utility of the product.

MECHANIZED CASTING OF CORED/HOLLOW CONCRETE UNITS

A process and plant for mechanized casting of cored/hollow concrete units has been developed by the Central Building Research Institute (CBRI), Roorkee (UP), which is based on pressure-vibration technique. This involves the simultaneous application of pressure and vibration.

Flooring/roofing in a building is a major item and consumes about 25 per cent of the building cost. Any saving in this item alone reduces the total cost of construction. Precast hollow cored concrete units save the consumption of materials, such as, concrete and steel and thus have been accepted as an economical substitute to the traditional in-situ solid slab construction. Due to the hollowness, the weight of the units is reduced. This makes the handling easier, and further reduces dead load on the bearing walls, resulting in economy in the foundations as well. The production scheme is also flexible enough to be adopted for producing reinforced as well as prestressed units.

In industrially advanced countries, the production of cored/hollow units is mainly being done in highly mechanized factories, wherein the plants are working, either with extrusion or multilayer compaction machines. some of the East European countries are utilising individual mould pressure vibration technique for the same purpose. In all these cases, highly sophisticated machines are being used for the preparation and feeding of concrete, alongwith accelerated curing methods, such as steam curing.

In India, the infrastructure of the building and its allied industries is not in a position to adopt such a technique and the plants involved in their present form. The technique to be adopted and the plant involved has to be simple, requiring low capital cost and be labour intensive, so as to make it readily acceptable.

In the process developed by CBRI, the mould alongwith the reinforcement cage is placed on the casting platform and the cores which are mounted on a trolley are introduced into it. An initial charge of the concrete is poured into the mould and the cores are vibrated, thus making the concrete to flow around the pipes to the soffit of the unit. An additional charge of concrete is then added and a dead weight is placed on it, to act as pressure on the concrete. Immediately after the vibration is stopped, the cores are withdrawn, dead weight is removed and are cured.

A pilot plant having a production capacity of 35 to 40 units per shift is working at the institute and it is still in operation. This can be demonstrated to the interested parties.

The prototype has been tested in extensive field trials and it is now being accepted by various Public Works Departments.

No Indian Standard specifications have so far been framed for this product. However, this is tested to conform to American and British Standards.

The raw materials like cement, sand, stone, cast iron, mild steel sheet and structures required are available indigenously.

The equipment required are casting set up including the vibrating assembly, pulling winch and fixed gantry mounted with hoists, transferring trolleys, mixer, gantry for unloading and moulds.

NEW PROCESS DEVELOPED FOR CENTIMIZONE

A process for the synthesis of 1-isopropyl-imidazolidine-2-thione (Centimizone) which is an antithyroid drug used for the treatment of thyrotoxicosis, has been developed by the Central Drug Research Institute, Lucknow.

This drug has been approved by the Drug Controller, India for marketing as a new drug on the basis of clinical trials carried out at four different hospitals in India. It has been found to be effective on patients who have become resistant to other drugs like neomercazole. The present consumption of antithyroid drugs in India is bout 50 kgs. per year.

The raw materials required for the production of this drug are isopropyl alcohol, bromine red phosphorus, ethylene diamine and carbon disulfide. All the chemicals are easily and indigenously available except ethylene diamine, whose production in the country is limited but hardly 250 kgs. of this chemical is required and this much can be easily procured from indigenous sources.

The drug is prepared by a 3-step process from the above mentioned raw materials in glass-lined vessels. Since the quantity of the drug required is relatively small, any unit manufacturing drugs can produce the drug in their existing plant with suitable adjustments. About 5 kgs. of the drug has been prepared in the laboratory in kg. batches.

PROGRESSIVE RESEARCH IN MINE TECHNOLOGY

The contribution of the Central Mining Research Station (CMRS), Barwa Road, Dhanbad (Bihar) is noteworthy in the field of research progress achived in the mining industry in India.

The important among the chain of laboratories and research plants set up by the Council of Scientific and Industrial Research, which is India's prime institution to direct and organise industrial research in various sectors, CMRS undertakes all scientific research and development work associated with mine working, mining methods, safety in mines, efficiency of mining and health hazards of mine workers. This also includes work on development of equipment and appliances useful for mining industry and standardisation of products going in the mining operation. The research covers problems of coal and metal mines as well.

The ultimate aim of this laboratory is to assist the industry in the greater production of minerals for the socio-economic development of the country. The main objectives of CMRS covers assessment of technology requirements-technological feasibility of methods and techniques; to devise methods in improving the standards of safety, health and efficiency of mining industry; development of new machines, methods and practices and development of import substitutes; provisional surveys in the area of health and safety; consultancy services; the economic analyses of the methods and operation and measures for conservation of minerals from long term view point.

The associated objectives of CMRS are to collect, collate and publish information in the above fields and disseminate such information and thus acting as a central warehouse for national and international information; to develop and promote national and international standards in the fields of production, preparation and use of minerals; to exchange information and provide scientific collaboration with like oraganisations within the country and abroad; to provide analytical facilities, testing and certification facilities in the above fields; and to provide training facilities.

The work of the station is undertaken on the basis of project-oriented programme, broadly divided into the following four fields viz. a) mine technology dealing with the problems of roof bolting, strata control, hydraulic stowing, pneumatic stowing, subsidence, blasting, roof supports, model study and operational research; b) mine safety dealing with problems of ventilation, fire, gas, explosive, explosion and also development, investigation and testing of safety equipment like flame-proof motors, switch gears, helmets, caplamps, methanometers, lamps, fans anemometers and velometers; c) mine engineering dealing with development, investigation and testing of wire ropes, roof supports, cappels, safety, hooks, distribution plates, cable, shackles, chains and other equipment used in mines and d) mine health dealing with the problems of air-borne dust, work physiology, occupational diseases (like pneumoconiosis, silicosis etc.), study of air pollution around factories, study of pneumoconiotic lungs using electron microscope and other health problems of mines.

Most of the projects undertaken by CMRS are aimed at helping the industry, directly or indirectly, in increasing the production of coal and other minerals. In addition to its own projects, CMRS has been taking up specific problems at the instance of/and with the financial participation of industries under the public as well as private sector undertakings.

The important organisation in the public sector benefitted from the CMRS services include Coal Mines Authority Ltd.; National Coal Development Corporation Ltd.; Bharat Coking Coal Ltd.; National Mineral Development Corporation Ltd.; Hindustan Copper Ltd.; Hindustan Zinc Ltd.; Bharat Heavy Electricals Ltd.; Fertilizer Corporation of India Ltd.; Hindustan Steel Ltd.; Indian Telephone Industry Ltd.; Coal Board; Coir Board; TISCO Ltd.; ISCO Ltd. and Philips India Ltd. A large number of other private organisations has also been benefitted from such services.

EXPORT OF CONSULTANCY SERVICES

Most of India's development programmes are, in some form or other, technology-oriented and the burden of achieving targets have fallen squarely on Indian engineering talent. It is not surprising, therefore, that the country has built up a strong infrastructure of technical and managerial competence, covering vital areas of the economy and industry. There are a large number of consultancy firms having highly qualified and capable engineers specialising in various fields. A striking feature of Indian consultancy firms is that they have built up their expertise under conditions of extreme economic stress, and thus they have developed a technology which is appropriate specially to developing nations. Emphasis has largely been placed on the use of labour-intensive technology and undue sophistication has been avoided. This "intermediate technology" is eminently suited for use in other developing nations.

In the field of civil and structural engineering, India has attained high standards of design and engineering expertise and is capable of undertaking large and complex civil engineering works. There is hardly any modern engineering structure which cannot be adequately and safely planned and designed completely by Indian consulting engineers. The competence extends to such diverse fields as design of dams and barrages, syphons, tunnels and bridges and fly-over, roads and highways, highrise and special industrial buildings and a host of specialised structures, such as, container shells for nuclear reactors, aircraft hangers of special design, etc.

In the field of iron and steel technology, a comprehensive package of consultancy services, ranging from concept to completion, can be rendered by Indian firms. The expertise of these consultants can also be utilised for related ferrous industries, such as, mini-steel plants, ferro-alloy industry, re-rolling mills, etc. In the non-ferrous field, Indian consultants are yet to develop sufficient process know-how, but are fully capable of providing detailed engineering and supervision of construction, commissioning, etc. The National Research Laboratories, such as, National Metallurgical Laboratory, National Chemical Laboratory and the Central Electro-Chemical Research Institute are attempting to bridge the gaps that exist in the field of process know-how, as far as non-ferrous metals industry is concerned.

In the last two decades, the country has witnessed quick expansion in the field of power generation, transmission and distribution. A number of leading Indian cansultants have built up adequate expertise for providing total consultancy services for thermal, hydro-electric and even nuclear power systems. To complement the technical expertise available for designing and erecting power plants, the country has also built up a strong base for the manufacture of heavy electrical equipment needed for power generation.

As far as railway engineering is concerned, there is an excellent pool of technical capability available in India. The Indian Railways are totally self-sufficient in all spheres of railway engineering and have also successfully lent the services of its engineers to developing countries of Asia, Africa and Latin America.

In a predominantly agriculture based Indian economy, the fertilizer industry plays an important role. A number of organisations, both in the public and in the private sectors, are capable of providing detailed engineering services. The process know-how in the line is also being built up gradually. In the field of petrochemicals, process know-how is being built up and Indian consultants are now capable of providing both process know-how and detailed engineering work.

The chemical industry is an important contributor to the country's economic and industrial growth. Several Indian consultancy organisations are operating today to provide consultancy services in the field. For the area of paper and pulp technology also, there is adequate expertise available in the Indian consultancy firms for a complete range of services.

Besides processing the necessary capability of providing consultancy services in the field of infrastructural facilities, Indian consultants have specialised in a large number of consumer industries also. The country can provide design, engineering expertise and know-how for a number of industries like textiles, sugar, cement, food products, cosmetics, beverages, etc. There is also sufficient capability for setting up foundries, machine shops and related industries.

In recent years, a new discipline known as management consultancy has been developed and several consultancy organisations render detailed services in this field. Management consultants offer to carry out market surveys, techno-economic feasibility, demand forecasting, etc. They also can offer their services in the fields of plant betterment, work study, operations, research and computer technology. Indian consultants are fully equipped to render services covering feasibility studies, project reports, detailed designs, supervision of construction, installation, commissioning, testing and maintenance.

Indian consultancy firms as indicated earlier, have built up "intermediate technology", which is very suitable for the developing countries of South-East Asia, Middle East, Africa and Latin America. In a number of countries in these regions, plans have been drawn up for quick economic and industrial growth. But they have not been able to fully utilise the rich and varied natural resources existing. This is attributable to the lack of appropriate technical and managerial man-power to implement the projects. Indian consultants, who have gained valueable experience under the limiting conditions of a developing economy, can easily adapt their knowledge to fulfil the needs of co-developing nations.

The developing countries of Asia and Africa are in great need of technical know-how and personnel and have been looking to friendly nations to help them fill these gaps. So far, they have been dependent largely on the developed countries like Britain, France, West Germany, United States and Japan for their requirements of know-how and technical services. However, India has a major advantage over the developed countries, in that the conditions prevailing in the various countries of Asia and Africa are more akin to those which India herself has experienced during the past quarter of the century. In fact, Indian technology would be far better suited to these countries than the highly sophisticated and extremely capital-intensive technologies offered by the developed nations. This is not to say that Indian consultants lack know-how in sophisticated fields. On the contrary, wherever necessary, India can provide consultancy services even in sophisticated fields. However, the point to be stressed here is that the developing nations of Asia and Africa would find it more advantageous to adopt the intermediate technology that India has to offer them; such a technology would be appropriate to their social and economic needs. Further more, Indian engineering costs are much lower than engineering costs in the developed countries. There is a large pool of technical man-power in this country which is available at competitive prices because the cost of "engineer-hours" in India is several times less than in developed nations. Thus, India can provide to its clients her competence at a very competitive price. These two factors may, in the long run, prove to be a boon to the export of Indian consultancy services.

Neighbouring countries of Asia, such as, Nepal, Bangladesh, Sri Lanka, Malaysia, Indonesia and the Philippines are striving to make advances in the economic field. Indian consultants can provide them know-how in a large number of fields. The Asian Development Bank, which is looking after the interests of developing nations in the Asian region, has been financing projects in the fields of agriculture, irrigation and flood control, transport and communications, municipal engineering covering water supply and sewage disposal, setting up of industrial development banks, etc. There is indeed excellent scope for Indian consultancy services in ADB-assisted projects. Once the co-developing nations of South East Asia are convinced of the technical competence of

Indian engineers, the prospects of exporting engineering goods would brighten considerably. In fact, the export of consultancy services should be viewed in this light.

The countries of Middle-East, several of whom have rich oil resources, are embarking on ambitious economic development programmes. Most of these countries are striving to build up basic infrastuctural facilities which are still lacking. Indian consultancy organisations have a good potential market in the Middle-East.

Similarly, several countries in the Carribean and Latin America regions need the help of consultancy organisations in the preparation and implementation of their projects. Most of these countries would prefer to go in for labour-intensive industries and Indian consultants are able to provide them excellent services in this direction. The African continent also is a good potential market for consultancy services from this country. Countries like Ethiopia, Tanzania, Kenya and Zambia need technical help for their projects, which India could easily provide.

Besides the Asian Development Bank, which concentrates on the Asian region, organisations like the United Nations Development Programme and the International Bank for Reconstruction and Development (World Bank) provide financial assistance for development projects all over the globe. In most of these projects, the technical assistance of consultants is called for. UNDP and World Bank assisted projects thus provide another impressive avenue for export of consultancy services from this country. Indian consultants, with their intimate knowledge of conditions prevailing in developing nations, should be able to provide excellent services to these countries.

India can provide services to developing nations on a turn-key basis. Turn-key package bids include not only the supply of machinery and equipment but also provision of design and engineering, construction, installation, starting and commissioning. India has already executed a number of international tenders for turn-key projects in the fields of textile, paper and hardboard, asbestos cement products, electric fans, domestie sewing machines, bicycles, cement, sugar and light and medium structural fabrications. In addition, Indian firms have taken up on a turn-key basis projects for high tension transmission power lines, including complete supply of sub-station and laying of pipelines for gas and petroleum.

With its excellent repertoire of technological capabilities, India can look forward to having a substantial share of the market in developed countries for turn-key projects.

Although Indian consultancy organisations have not gained the same quantum of experience as consultants from developed nations, yet Indian organisations have already made a mark in the field of exports. A number of consultancy organisations, both in the public and private sectors, have exported their services.

The scope for exporting technical services is indeed immense, be it in the form of independent consultancy services, turn-key projects or joint ventures. In fact, consultants from developed nations can sub-contract part of their work they secure in their own countries to Indian consultants. This would be mutually advantageous because the cost of engineer hours in India is much less than in any developed country and hence the consultants aborad can reduce the overall costs, while the Indian consultants can gain valuable experience. Similarly, there are possibilities for Indian consultants collaborating with consultants from developed nations for projects in third countries. Here again, the arrangement would be mutually beneficial and would enable Indian consultants to gain a foot-hold specially in countries where the consultants from developed nations are already well entrenched. ☐

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EXPORT SUCCESS IN SPORTS GOODS

The year 1972-73 witnessed India's export earning in sports goods reaching a new high at Rs. 36.60 million, outstripping the target of Rs. 30 million for the year and registering nearly 44 per cent increase over the exports in 1971-72 at Rs. 25.50 million. Australia, Bahrein Islands, Belgium, Canada, Sri Lanka, Italy, Netherlands, Kenya, Kuwait, France, Malaysia, Singapore, Mauritius, Zambia, Malavi, Sweden, Spain, Switzerland, Thailand, UK, USA and Federal Republic of Germany were the significant markets. Poland emerged as new market during the year, importing sports goods valued at nearly Rs. 1 million.

Stepping up their exports to a record figure of Rs. 5 million during 1973-74, one of the manufacturers of sports goods, M/s. F.C. Sondhi and Company Private Limited, Basti Sheikh Road, Jullundur, Punjab, have done their bit to prove qualitative standard and price competitiveness of Indian sports goods in international market. Interestingly, the firm's exports have risen to this level from merely Rs. 2.1 million in 1971-72 and Rs. 1.2 million in 1970-71. The firm's exports were limited to only Rs. 300,000 when they entered the export field for the first time. To-day, the sports goods manufactured by the firm find their way to a large number of countries which include developing as well as developed ones alike. They were awarded a Certificate of Merit by the Sports Goods Export Promotion Council, New Delhi, for their export performance in 1971-72.

Though engaged in sports goods business for many years, they entered the production field only 7 years back. Within this short span of time, they have succeeded in establishing themselves as a leading manufacturing unit in the line. Today, their comprehensive range of manufactures covers a wide variety of sports goods catering to the requirements of various outdoor and indoor games. To their credit they have secured orders for export of even ski gloves (which are still not being produced in the country on commercial scale) from a sophisticated market like Sweden.

Claimed to be the second largest sports goods manufacturing unit in India, the firm is marching progressively towards expansion, modernisation and diversification. The Jullundur firm is presently manufacturing at its full rated capacity and expects to take up shortly other lines of sports goods manufacture. These plans are expected to boost their exports to Rs. 10 million mark by 1976-77.

Highly labour intensive, the Indian sports goods industry has in its infrastructure more than 650 units of large, medium and small sizes. During 1970-71, the industry produced goods worth Rs. 53 million as against Rs. 40 million in 1969-70. The figures of installed capacity during the respective years were Rs. 70 million and Rs. 60 million. On an average, the domestic demand is of the order of 30 per cent of the total production.

The production profile of the industry covers items of indoor and outdoor games, such as, cricket bats, balls, stumps, batting and wicket keeping gloves and other requisites of cricket, hockey balls, sticks and other items of the game, footballs and gloves, badminton and tennis rackets, tennis balls, polo equipment, golf gloves, punching gloves, boxing gloves, basket balls and base balls. Apart from these, a complete range of items pertaining to indoor-games and a wide variety of instruments for physical exercise and E.P.N.S. sportsware are manufactured by the industry.

SANITARY FITTINGS ACTIVE IN EXPORT

India exports annually a variety of sanitary fixtures made from ceramic material, iron and steel and alloys of aluminium, copper, zinc and lead. During 1972-73, sanitary fixtures made from copper and alloys alone were supplied abroad at a cost of Rs. 4.20 million as compared to Rs. 1.83 million in 1971-72. Additionally, sink wash basins made from ceramic materials earned another Rs. 2.15 million as against Rs. 1.55 million while those made from iron and steel secured over Rs. 0.60 million as against Rs. 0.54 million. In the year, Poland, USSR, USA, Philippines, Sudan, Sri Lanka, Hungary, Malaysia and Nepal constituted the principal importing markets of sanitary fixtures made from copper and alloys while Kenya, Nigeria, Nepal, Mauritius, Bangladesh and Belgium were the leading buyers of sink wash basins made from ceramic materials. Sink wash basins of iron and steel were mainly bought by USSR, USA, Kenya and Mauritius. Apart from these main varieties, sanitary fixtures made from alloys of aluminium, zinc and lead were also exported during the year to Iraq, Saudi Arabia, USA, Zambia, Muscat and Qatar.

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Adding to the export performance of the sanitaryware industry during 1972-73, M/s. Hindustan Sanitaryware and Industries Limited, Bahadurgarh, District Rohtak, Haryana, exported sanitarywares at a value at Rs. 1.43 million. The firm, in fact, improved its exports marginally during the year from Rs. 1.29 million in 1971-72. Their export destinations during the year included a number of developing as well as developed countries.

The firm achieved 11 per cent increase in production during 1972-73 over that of 1971-72. Actual production recorded was 5571 tonnes as against 5002 tonnes in the respective years. The firm has active plan to increase its production and has already taken a concrete step to this end with the installation of its own generating sets. It also proposes to import some vital equipment with a view to improve its production.

ALUMINIUM CONDUCTORS TO ZAMBIA

The growing overseas demand for steel reinforced aluminium conductors (ACSR) manufactured in India is indicative of the competitive quality and price of the product. Of the total exports of aluminium and aluminium products valued at nearly Rs. 34.55 million in 1972-73, aluminium conductors (ACSR) alone accounted for Rs. 25.36 milion. During the first six months of 1973-74 (April-September, 1973), the foreign exchange earning of these conductors totalled Rs. 14.95 million. USSR with an intake worth Rs. 4.37 million topped the list of buyers, followed by Libya at Rs. 4.14 million. In order of the value of supply, Singapore, Qatar, Nigeria, Muscat and Nepal were the other destinations during the period.

Contributing to the export effort in the line, M/s. Aluminium Industries Ltd. (ALIND), M. G. Road, Cochin (Kerala), one of the manufacturers and exporters of aluminium conductors, have recently arranged for airlifting of 22 tonnes of aluminium conductors to Zambia. This, in fact, is the first consignment supplied by the firm against an order for 800 tonnes of ACSR worth nearly Rs. 6 million secured by them earlier from the Zambia Electric Supply Corporation, Lusaka. The Zambia Corporation placed the order on the Indian firm through M/s. Crown Agents, London. An additional quantity of about 70 tonnes is also expected to be airlifted shortly to meet the immediate requirements of the Zambian Corporation. Next instalment of 300 tonnes against this order is being despatched by sea alongwith another 200 tonnes to be supplied to another customer in Zambia.

M/s. ALIND have a consistent record of increased export turnover. In addition to about Rs.8 million worth of conductors supplied to Libya, the firm's export earnings during 1973-74 totalled Rs. 4.60 million as compared to Rs. 3.86 million in 1972-73 and Rs. 3.50 million in 1971-72. Lately, they have executed a major contract with the USSR for supply of conductors (ACSR), besides supplying their products to Australia, Africa, West Asia, South East Asia and South America. Its outstanding orders amount to about Rs. 17.5 million.

Notwithstanding its export commitments, ALIND have been supplying aluminium conductors to a large number of Electricity Boards and power projects in the country.

Besides cables, conductors and steel wire products, the firm is in a position to introduce in its export stream cable making machines manufactured at their Hyderabad unit.

Categorised as one of the priority industries, ACSR/AAC industry has an installed capacity of 103,950 tonnes spread over 40 units including 2 in the public sector. Actual production was estimated at 78,100 tonnes in 1972-73 as compared to only 23,600 tonnes about a decade back in 1960-61. During the first two quarters of 1973-74, actual production was 27,600 tonnes. Besides ACSR/AAC conductors, the range of items produced by the cable and wire industry in India includes winding wires and strips, PILC power cables, underground telephone cables, PVC power cables, PVC/VIR cables and switch board cables for telephone and bare copper conductors.

EXPORT SUCCESS OF SMALL INDUSTRIES CORPORATION

Securing export orders for a number of diverse products of traditional as well as non-traditional nature at a value of nearly Rs. 2 million during the period of only one year from its inception in 1972, Delhi Small Industries Development Corporation, State Emporia Buildings, Baba Kharak Singh Marg, New Delhi, has proved the high quality and sophistication of goods manufactured by small scale manufacturing units.

The Corporation has entered the export markets against keen international competition. Altogether diverse products, ranging from oil pumps to handicrafts and from readymade garments to engineering goods have been introduced by the Corporation to more than a dozen countries amongst which sophisticated markets, such as, USSR, USA, Canada, UK, Sweden, Denmark, Norway and Netherlands are significant. USA and Canada purchased footwear and nuts and bolts at a cost of Rs. 1.30 million, accounting for more than 50 per cent of the total foreign exchange earning of the Corporation.

The Corporation is presently engaged in overseas market research with a view to introduce their products in other countries at competitive prices. It is also endeavouring to set up a warehouse in USA besides appointing number of representatives for promotion of export oriented goods. Apart from this, a large number of trade enquiries are being received by the Corporation from overseas markets for the products.

EXPORT PERFORMANCE AND POTENTIAL

LEATHER EXPORTS MAINTAIN RISING TEMPO

Leather is one of the major foreign exchange earning items. The value of semi-processed hides and skins exported from India aggregated to Rs. 1524 million during 1972-73 against a target set for the year at Rs. 675 million. During this period, the exports of finished leather and leather goods amounted to Rs. 221 million against a target of Rs. 150 million. However, footwear and components fetched only Rs. 126 million against a target of Rs. 150 million for the year 1972-73. The exports of semi–processed hides and skins, finished leather and leather goods, leather footwear and components during the year 1971-72 amounted to Rs. 840 million, Rs. 60 million and Rs. 86 million respectively.

Thus, the total exports of semi-processed hides and skins, finished leather and leather goods, footwear and components improved from Rs. 987 million in 1971-72 to Rs. 1871 million in 1972-73. Semi-processed hides and skins alone accounted for 80 per cent of the total exports during 1972-73 on account of a boom in the world market.

It is the policy of the Government that export of semi-processed hides and skins should be restricted and those of finished leather and leather manufactures should be augmented. Therefore, the Government have placed restrictions on the export of semi–processed hides and skins by introducing a quota scheme and taken other corrective steps in the matter.

The targets set for the export of semi-processed hides and skins (including E.I. tanned and chrome tanned), finished leather and leather manufactures and leather footwear and components for the year 1973-74 are Rs. 1300 million, Rs. 350 million and Rs. 150 million respectively. Against these targets, the exports of these products during the year 1973-74 (April-December 1973) have been Rs. 1228 million, Rs. 141 million and Rs. 66 million respectively. During the corresponding period of 1972-73, the export of these items were of the order of Rs. 1008 million, Rs. 133 million and Rs. 73 million respectively.

Export of semi-processed hides and skins during the first nine months of the current year has been higher than that of the corresponding period of last year due to the reason that last year the unit prices were low. The abnormal rise in prices of semi-processed leather has continued this year also.

As regards finished leather and leather manufactures, there has been a marginal increase only as compared to last year.

There has been a slight fall in the export of leather footwear and components. This is due to the fact that the prices of finished leather went up considerably but there was no corresponding increase in the demand.

RUBBER GOODS EXPORTS UP

Exports of Indian rubber goods have been showing a rising trend. These goods are being increasingly accepted in the foreign markets because of sophistication in quality and competitive prices.

During 1972-73, rubber manufactured goods earned around Rs. 14.3 million in foreign exchange; the target for 1973-74 stands at Rs. 21 million. Actual earning during the period April-November 1973 was of the order of Rs. 10.6 million against Rs. 8 million during the same period of 1972.

Cycle tyres and tubes were the largest export earner in this group. Their exports during April-November 1973 were valued at Rs. 4 million as against Rs. 5.4 million during the whole year of 1972-73. Rubber gloves came next with an earning of Rs. 0.9 million during the period under review (1973) against a mere Rs. 0.05 million in the whole year of 1972-73. Target for this item for the year 1973-74 has been placed at Rs. 5.5 million.

Other items under the group include rubber cots and aprons for textile industry, hoses, sheetings, beltings, other pharmaceutical rubber products (excluding gloves) and hair beltings. All these items put together fetched Rs. 5.7 million during the eight month period (April-November 1973). Of these, export earnings of beltings need mention. These were Rs. 0.8 million in the first eight months of 1973-74 and Rs. 0.9 million in the whole year of 1972-73.

While Indian rubber goods are exported to several countries in the world, Afghanistan, Bangladesh, Abu Dhabi, Kenya, Hong Kong, Kuwait and Zambia are the prominent importing countries.

INDIA TO SUPPLY RAYON AND SYNTHETIC TEXTILES TO IRAQ

India has recently secured orders valued at Rs. 5 million for supply of rayon and synthetic textiles to Iraq. The varieties that will be exported to Iraq include velvets, brocades, brosso, georgette, tafatta, satin, twill etc. The Silk Rayon Textiles Export Promotion Council, Bombay which (in conjunction with STC) helped in negotiating these orders has evolved its startegy for stepping up exports to Iraq to the tune of Rs. 10 million during 1974-75. The target is expected to be achieved in view of the prevailing goodwill between the two countries, Iraq's dependence on import of certain types and quantities of rayon and synthetic textiles and restriction on imports of these items from some of the developed countries as Japan and USA.

Iraq is one of the strategic oil producing countries to which exports are planned to be augmented by the Silk and Rayon Textiles Export Promotion Council, which recently finalised its export projections country-wise and commodity-wise to the West Asian and Gulf countries. By 1978-79, exports to the West Asian Gulf countries are planned to reach the target figure of Rs. 125 million.

UPTREND IN EXPORT OF COTTON TEXTILES

Exports of cotton textiles are estimated to touch a new high—Rs. 1948 million during 1973. During 1972, the exports of cotton textiles amounted to Rs. 1500 million and in 1971 about Rs. 1093 million.

Cotton piecegoods topped the itemwise list with Rs. 1212 million worth of exports to its credit in 1973 as against Rs. 8.11 million in the preceding year. In terms of quantity, the respective figures were 572.4 million sq. metres and 430.5 million sq. metres. During 1971, 389 million sq. metres were exported for a value of Rs. 666 million.

Cotton apparel is the next best item which netted Rs. 362.5 million during 1973, as compared to Rs. 248 million in 1972 and Rs. 118 million in 1971. Value of exports during 1969 was a mere Rs. 43.7 million.

Other cotton manufactures also registered an uptrend in export and earned Rs. 239.4 million in 1973 as against Rs. 205.6 million in the previous year. During 1971, the exports were valued at Rs. 172.3 million. Export of cotton yarn, however, declined both in terms of quantity and value. During 1973, 10.9 million kgs. of cotton yarn exports fetched Rs. 124 million as against 22.2 million kgs. valued at Rs. 227.4 million during 1972.

Indian cotton textiles are exported to almost all countries in the world. However, major buyers include Afghanistan, Saudi Arabia, Bangladesh, EEC., U.K., Sweden, USSR, Poland, Canada, Australia, Newzealand, U.S.A., Federal Republic of Germany, France and Czechoslovakia.

INDO-YUGOSLAV TRADE

The bilateral trading arrangement between India and Yugoslavia on rupee payment basis introduced in 1959 was terminated on December 31, 1972. Since January 1, 1973, the convertable currency payment system has been in operation to meet all financial obligations between the two countries except old rupee payment contracts.

Indo-Yugoslav trade recorded a striking growth during the validity of rupee payment arrangement for over a decade. The total trade, both ways, rose from a figure of Rs. 78.00 million in 1960 to Rs. 464.00 million in 1970. The figures of India's trade with Yugoslavia during the last five years may be seen as under :–

Rupees in Million

Year	Imports from Yugoslavia	Exports to Yugoslavia
1968	132.46	161.40
1969	64.26	304.60
1970	70.17	393.85
1971	61.75	271.81
1972	53.42	151.36
1973 (Jan.–Aug.)	55.03	113.60

There has been a fall in our exports to Yugoslavia after 1970. India's exports to Yugoslavia upto 1972 were subject to availability of funds in Yugoslavia rupee account under clearing arrangement. As after 1970 the Yugoslavia rupee funds were not sufficiently generated by Indian imports, India's exports also declined.

During January-August 1973, Indian exports to Yugoslavia showed an increasing trend; exports to Yugoslavia during this period totalled Rs. 113.60 million as against Rs. 101.65 million during the corresponding period of the preceding year.

The commodity composition of India's exports to Yugoslavia shows that it is small in range and volume. Six products alone, including tanned skins (partially goat skins), tea, groundnuts, pepper, rubber tyres (mainly trucks and buses) and iron ore constituted a very substantial portion (more than 50 per cent) of Indian exports to Yugoslavia. Exports of tanned hides and skins, tea, groundnuts, coir and pepper recorded increases. Exports of engineering goods to Yugoslavia were Rs. 28.44 million during 1972-73. The principal items of engineering and chemical products exported were auto-parts, auto-chassis and engines, tractor parts, wire ropes in the engineering sector and rubber tyres and tubes, spectacle frames in the other sector.

Indian imports from Yugoslavia showed a declining trend upto 1972 but improved during January-August 1973. The imports during January-August 1973 stood at Rs. 55.03 million as against Rs. 40.88 million during the corresponding period of the preceding year. Indian imports from Yugoslavia were mainly wheel tractors, heavy plates and sheets not containing alloys, parts of tractors, parts of motor vehicles, chemicals drugs and pharmaceuticals, etc.

Both the countries continue to extend their support to the promotion of mutual trade by providing all possible assistance, within the framework of their rules and regulations to the goods of the other country whenever these prove to be competitive in terms of basic commercial considerations. Conditions for further growth and diversification of trade between the two countries appear to be favourable in 1974 and thereafter.

EXPORT OF HAND TOOLS

India offers hand tools of exceptional value to the foreign buyer. The high standard of technology available to the hand tool industry coupled with the low cost of labour, enables the country to offer hand tools of good quality at highly competitive prices. With the big increase in the demand for hand tools, India is in a position to offer a sizeable range of hand tools to the foreign buyers.

Foreign exchange earned by hand tools and small tools during the last few years is shown in the table below :

Year	Value in million rupees
1956-57	1.633
1960-61	0.636
1965-66	8.062
1969-70	26.717
1970-71	43.784
1971-72	60.998
1972-73	76.018

Hand tools today occupy a prominent place among the engineering goods being exported from India. These are exported to over forty countries in the world which include such sophisticated and quality-conscious markets as the USA, Czechoslovakia, the UK, the USSR, Poland, Canada and Australia. The export to these countries has been continuously on the increase. This is a glorious tribute to the quality and workmanship of the hand tool industry.

In different countries and in different context, hand tools have a different meaning. Technically speaking, the term "hand tools" covers all the different types of tools used by mechanics and craftsmen by hand, as against those tools used on or with the help of machines. Thus, it includes such tools as spanners, wrenches, pliers, pincers, hammers, screwdrivers, chisels, etc.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

SILK INDUSTRY

AN OUTLOOK

Ranking prominently among the main silk producing countries of the world, India's silk industry holds a leading position in the production of muga silk. Overall production of the sericulture industry in the country today consists of 2.7 million kgs. of raw silk valued at about Rs. 400 million while that of pure silk fabrics is estimated at 35 million metres valued at over Rs. 500 million. Mulberry silk which is considered to be the best variety in the world is produced in bulk quantity in India. During 1972-73, the industry's raw silk output rose to 2785 tonnes from 2600 tonnes in 1971-72, registering 7 per cent increase. Of this, mulberry silk alone accounted for the bulk of output at 2215 tonnes while the rest was shared by tasar, eri and muga raw silk varieties.

The range of varieties of silk grown in India includes tasar silk, eri silk and muga silk, besides the principal variety of mulberry silk. At the world level, India occupies fifth place in the production of mulberry silk, second place in the case of tasar silk and first place in respect of muga silk. Mysore, West Bengal and Jammu and Kashmir states are the main mulberry producing areas in India which account for over 95 per cent of the total production of this variety. Eri and muga silk varieties are mainly produced in the state of Assam while tasar silk production is confined to Bihar, Madhya Pradesh and Orissa states. Apart from these varieties, a scheme to produce tasar raw silk has lately been evolved to commence production in the sub-Himalayan belt. The area under mulberry raw silk rose to 98,575 hectares in 1970 from only 45,580 hectares in 1945.

The typical feature of Indian silk is the disciplined creation of designs which has made it universally popular. In fact, Indian traditional craftsmanship and the rare hand woven fabrics stand out in bold contrast to the monotony of machine made fabrics. Varanasi is the famous centre in India which is specialised in Kinkhab brocade. Dupions woven from handspun coarse yarn of mulberry silk are immensely popular as trend setters in fashion centres of the world. Tasar fabrics too have universal appeal because of their exquisite colour tints, particularly the shades of emerald beige and sapphire and the golden tones. These outstanding features of various types of Indian silk have not only made these popular at home but abroad also.

Besides, Himroo silk handloom products of Aurangabad, silk sarees of Murshidabad and several other varieties of silk produced at Madras, Mysore and Assam are in growing demand at home and abroad. Indian silk sarees are used in large volume for preparation of a variety of elegant dresses like jackets, suits and evening dresses.

The draft Fifth Five-Year Plan provides Rs. 80 million for the development of silk industry through Central Projects and for the administration of the Central Silk Board. Apart from this, an allocation of Rs. 256.50 million has been proposed for development of sericultural industry in the States' Plan to achieve a production target of 4.64 million Kg. during the Fifth Plan.

The achievements made by the research institutions in India in sericulture are also noteworthy. Research in sericulture is comparatively young. It is completely centralised under the Central Silk Board since 1961. There are 2 research institutions for mulberry—one each in Mysore and Berhampore (West Bengal) and one institution for tasar in Ranchi (Bihar) with a substation each in Imphal (Manipur), Bhimtal (U.P.) and Batote (Jammu). The needs of muga and eri are looked after by a research station at Titabar in Assam. A Univeltine Research Sub-Station has also been started at Majra (UP) recently. Besides this, the Silk Board also runs 3 basic seed farms at Pampore (Kashmir), Coonoor (Tamil Nadu) and Lakha (MP).

The two most significant achievements of research in recent times have been the evolution of a new technique of rearing of bivoltines in Mysore type of climate and successful evolution of an interspecific hybrid between Antheraea pernyii (Chinese tasar) and A. roylei (Indian) which can be reared on oak plants abounding in the Sub-Himalayan region from Manipur to Jammu. While the former discovery has laid the foundation for a scheme which envisages an ultimate output of 800 tons of bivoltine mulberry silk in India, the latter has led to the formulation of giant projects for Manipur, Uttar Pradesh and Himachal Pradesh for production of oak tasar.

Despite a keen competition from synthetic silk fabrics, India's sericulture industry has been able to maintain the level of export. During 1972-73, the export of silk goods was of the order of Rs. 83.10 million as compared to Rs. 71 million in 1971-72. In fact, the exports rose to these levels from only Rs. 3.5 million in 1958-59. As against the target placed at Rs. 100 million for the year 1972-73, the actual exports during the year thus represent nearly 85 per cent achievement.

The export target for the year 1973-74 is placed at Rs. 120 million. The target is within reach as actual exports during the first ten month of 1973-74 (April '73-January '74) secured foreign exchange worth Rs. 99.37 million as compared to Rs. 65.60 million in the corresponding period of the preceding year. Of the total export earning during April '73-January 1974, mulberry silk goods alone secured the bulk of earning at a value of Rs. 83 million as compared to Rs. 54.50 million (April 1972–January 1973) while the share of tasar silk goods amounted to Rs. 16.30 million as against a little over Rs. 11 million.

In the mulberry silk goods sector, all the varieties registered sharp improvement during April '73–January '74. Dress material which constituted the major area of sizeable export earning secured Rs. 31.40 million (April 1973–January 1974) as compared to Rs. 19.60 million (April 1972-January 1973). Sarees was the next significant item which improved its offtake to Rs. 17.33 million from Rs. 9.88 million while scarves exports secured Rs. 20.10 million against Rs. 16.10 million. Among other varieties, readymade garments exports looked up to Rs. 9.84 million from Rs.6.20 million, ties to Rs. 2.62 million from Rs. 1.97 million and others to Rs. 1.76 million from only Rs. 0.75 million.

Federal Republic of Germany was the principal importer of mulberry silk goods from India which improved its intake to Rs 15.63 million from Rs. 12.30 million during the corresponding period of 1972-73. France, USA and UK respectively purchased more at Rs. 9.50 million, Rs. 8.20 million and Rs. 7.17 million as compared to Rs. 6 million, Rs. 4.4 million and Rs. 2.80 million. Japan doubled its intake to Rs. 6 million from Rs. 3 million. Switzerland, Italy, Sweden, Denmark and Poland were among major buyers.

In the tasar silk goods area too, Federal Republic of Germany topped the list of buying countries in the first ten montht of 1973-74 with an increased intake at Rs. 8.35 million as compared to Rs. 5.48 million in the corresponding period of the preceding year. USA, the second important importing market, purchased more at a cost of Rs. 1.72 million as compared to Rs. 1.24 million. Japan doubled its intake at Rs. 1 million against Rs. 0.5 million. Sweden, Switzerland, Italy and France were pominent among other buyers.

WEIGHING MACHINERY

The weighing machinery industry in India is well established. With four manufacturing units engaged in the line, the industry has a licensed capacity of Rs. 70 million per annum. The industry can manufacture a wide variety of machines ranging from domestic balances to heavy duty railway weigh bridges. A variety of spring balances, crane weighers upto a capacity of 5 tonnes, semi and self-indicating counterscales, steel yard and platform type weighing machines, grain weighers, predetermined weighers, dormant weighers, milk weighing machines, airport baggage weighers and weigh bridges of both road and railway type, are some of the machines produced by the industry.

Recently, a few new ranges of semi and self-indicating counter scales, portable platform weighers and railway wagon tippler weigh bridges have been manufactured for the first time in the country. The industry is poised for the manufacture of more sophisticated types of weighing machines, such as, those for wagons in motion, weigh feeders, belt weighers as well as machines based on load cell principle.

Besides meeting the growing domestic demand, the weighing machinery industry in the country has come to make a mark in the export trade also. In 1972-73, the industry exported beam scales mainly to South Yemen People's Republic, Bangladesh, Muscat, Bahrein Islands, Algeria and Nepal; platform scales to Afghanistan, Muscat and Sudan and other weighing machinery to Kuwait, Jordan, Ethiopia, and Nepal. Libya, Lebanon and Afghanistan were the major importers of weighing machinery parts.

MANUFACTURE OF INSULATORS

Insulators are special ceramic products used in power generation and distribution and come in the category of electrical porcelain. The items are disc insulators, post insulators, pin insulators and bushings for transformers, switch-gears, etc.

State Electricity Boards account for large purchases of H. P. Insulators. In the case of L. T. insulators, the Post and Telegraph sector is the major consumer.

Low tension insulators are used in Post and Telegraph activities and the development of additional capacity for these type of insulators is reserved for small scale sector. Some of the larger factories set up earlier for production of H. T. Insulators have also been producing Low Tension Insulators in limited quantities.

There are seven factories manufacturing various types of H. T. Insulators with a total installed capacity of 21,000 tonnes per annum. Annual production amounts to 20,009 tonnes. During the last 10 years, there has been a substantial increase in production as well as the range of production.

H. T. Insulators of certain types and of higher voltages are not being manufactured indigenously. Imports of such types have been 420 tonnes corresponding to Rs. 3.5 million during 1969-70, 300 tonnes corresponding to Rs. 3.2 million during 1970-71 and 580 tonnes corresponding to Rs. 4.93 million during 1971-72.

Exports have ranged between Rs. 0.2 million to Rs. 1 million during the last five years. This is a field in which there is considerable scope for export expansion.

Development of additional capacity for H. T. insulators needs to be programmed in the light of power development schemes in various States. An additional capacity of 10,650 tonnes has been approved so far and this includes expansion of some existing factories.

The major raw materials, namely, China clay, Quartz and Felspar required by the industry, are available indigenously. Proposals for foreign collaboration are considered on merits.

PRODUCTION OF PLYWOOD

The plywood industry in India is located mainly in Assam, West Bengal, Kerala and Mysore. There are 33 factories, with an installed capacity of 43 million square metres. Production during 1971 and 1972 has been 27.5 million square metres and 32 million square metres respectively.

Additionally, there is production of about 6.8 million square metres in the small-scale sector, and the locations of these units are also in the same areas, as those of the large-scale sector.

Exports during 1970-71, 1971-72 and 1972-73 have been Rs. 13.8 million, Rs. 10 million and Rs. 4.5 million respectively.

An additional capacity of 24 million square metres has also been approved in this field. On the basis of the progress of the various schemes including finalisation of arrangements for import of capital goods, investment, etc., it is expected that a capacity of 12 million square metres will be implemented by 1978-79.

The demand by 1978-79 has been assessed by the Directorate General of Technical Develoament at 55 million square metres per annum corresponding to an installed capacity of 62 million square metres. On this basis, there is scope for some further capacity in this field.

In the future expansion of this industry, proposals for establishment of capacity in Andaman and Nicobar Islands, Arunachal Pradesh, Nagaland and Madhya Pradesh will be encouraged from the point of view of availability and access to raw materials. It is particularly desirable that new factories are located in backward areas, taking into account the extent of raw material resources available in these areas and the need for their exploitation. The other major input for this industry is synthetic resin adhesives, such as, urea formaldehyde and phenol formaldehyde, both of which are available indigenously.

The plywood industry has also set up the Indian Plywood Industries Research Institute at Bangalore on a cooperative basis for carrying out service research and technical assistance for the industry.

Certain items of capital equipment, such as, Peeling Lathes, Veneer Slicers and Splicers are being imported.

INCENTIVES FOR CONSULTANCY SERVICES ABROAD

The Government has decided to give financial assistance to the Indian Consultancy Organisations in their export efforts. This will help them in promoting their market surveys abroad, opening foreign offices, strengthening publicity campaigns etc., particularly in the developing countries, where there is a great potential for supply of consultancy services.

For obtaining financial assistance, the consultancy organisations will have to get themselves registered with the Federation of Indian Export Organisations at New Delhi. The registration will be based on their past experience in the field and proved specialisation to undertake foreign assignments. The organisation should have a minimum annual turn-over of Rs. 1 million with foreign exchange earnings of at least Rs. 0.2 million.

STRIDE IN SUMMATION METERING

A step forward has been taken in manufacture of sophisticated special metering equipment with the manufacture of S10 Electronic impulse summator and its associated type TS contactless transmitter which represent advanced combination in impulse summation metering. M/s. English Electric Company of Madras are the manufacturers for these products.

Incorporation of transistorised 'logic' circuitry and absence of moving parts in the new equipment result in better performance, accuracy and resolution, longer life and high pulse rate capacity. The equipment does not need replacement of worn out parts and regular preventive maintenance. Any number of channels can be accommodated for summation with SIO summator and by including a subtraction unit, it can be made to deal with positive and negative units, giving net registration and output for retransmission. Indication is provided by cyclometer registers driven by stepping motors.

Entirely different from conventional transmitters, the type TS contactless transmitter has a number of advantages over the conventional contact making type transmitters. Among these, elimination of the problem of contact bounce and much reduced mechanical load on the meter are significant.

Yet one more addition to the firm's impulse metering range is Type S6 Electronic KVA demand meter. In this equipment, the KVA is electrically computed from the impulses received from KWH and RKVAH meters and is accurate from unity to zero laging power factor over a wide range. The modular construction gives maximum flexibility and facilities for remote indication and impulse transmission for operation of printo maxigraphs. It has an accuracy over the whole power factor range equal to that specified in BS37 part 5 1962 Clause 13a for a KW maximum demand indicator. By careful adjustment, an overall accuracy, equal to or better than that of commercial grade KWH demand meter, is attainable. These meters have been supplied to West Bengal State Electricity Board for their Dunlop Substation.

M/s. English Electric Co. have to their credit development of a number of sophisticated electric equipment which cater to the requirements of power development sector of the country. They are also exporting these equiment to a number of countries abroad and earning foreign exchange every year in growing volume. They have recently secured export contract from the Government of Cambodia for supply of 110 KV and 1 KV Control and Relay Boards for Poste-Quest Post Sud, Centrale-Sud, Post-Nord and Centrale-Nod substations for Phnom-Penh high voltage transmission project. Besides the order from Cambodia, they have also secured a contract from Iraq for the supply of 1-33 KV Control and Relay Board for Samawa substation of National Electricity Administration in that country and another order form Thailand.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

BRICK MAKING MACHINE DEVELOPED

The production of building bricks in the country falls far below the market demand and the short-fall is likely to increase manifold in the coming years during which large increase in building activity is anticipated. It is now well recognised that traditional methods of hand-moulding cannot cope up with the heavy demand and many brick manufacturers are anxious to adopt mechanized methods of production. In recent years, several imported brick making plants have been established in the country. These plants have involved large capital investments, a major proportion of which was in foreign exchange. The plants are fully mechanised and it is obvious that such plants are much beyond the reach of the small scale manufacturers who are mainly interested in plants in which only the shaping of the brick is mechanised, the other operations being carried out manually. Such semi-mechanised plants require far less capital outlay.

Some engineering firms in the country have marketed pugmills for brick making, catering, to the needs of the small producers. Most of these machines are of out-moded designs and fail to give satisfactory service. Manufacturers are, therefore, reluctant to buy these machines.

Keeping in view the need for developing a machine of modern design, capable of producing about 3000 wire cut bricks per hour, with an economically low rate of power consumption, the Central Building Research Institute (CBRI), Roorkee (UP) has developed a brick making machine which is of an advanced design and can fully satisfy the requirement of the industry both from the point of view of capital outlay and efficient service.

The brick making machine developed by CBRI is a pugauger mill incorporating latest advancement in the design of such machines. It has certain novel features. It is a robust machine of double-deck design. The double-shafted mixer forms the upper deck and the main auger is placed in the lower deck. Provision has been made for a vacuum chamber of large capacity to avoid bridging of clay. An efficient pugsealer unit has been provided to effect perfect sealing of the vacuum chamber. A straight barrel of 400 mm. dia has been provided for housing the main auger. The auger is of variable pitch design which substantially increases the efficiency of extrusion. The auger works at 25 r.p.m. and it is designed to give an output of 3000 wire cut bricks per hour. The bearings of the auger and mixer shafts have been so placed that they do not come in line of clay flow. All bearings are either a roller or ball requiring very little attention for maintenance. Separate drives have been provided for the mixer and the main auger. Power required to drive the mixer is 30 H.P. and that for the main auger is 35 H.P. A 2 H P. motor drives the vacuum pump. All wearing parts, namely, blades and augers have been tipped with hard wearing alloy. Detailing has been done in a manner which permits easy replacement of worn out parts without requiring dismantling of shafts or other driving gears.

A machine, with an output of 3000 bricks per hour, is considered to be the smallest economic unit. This is in conformity with the output of the smallest economic kiln producing about 20,000 bricks per day (24 hours).

The main body of the machine comprises of various machined casting of C.I. The castings house the various m.s. and carbon steel shafts. As mentioned earlier, shafts are supported in roller and ball bearings. The drive to the shafts is arranged by machined M.S. and C.I. gears. The auger blades have been fabricated with M.S. sheets tipped with hard stellite alloy.

Standard components like reduction gear (Radicon), electric motors and vacuum pump have been used. These are controlled by automatic star-delta starters. All the components and materials required are available indigenously.

The machine can be purchased from the following firms to whom the manufacturing licences have been given : M/s. Dayal Machine Manufacturing Co., 149/A/7, O/S Dariapur Gate, Ahmedabad-1 (Gujarat); M/s. Kay Iron Works Co., Ambala Road, Yamuna Nagar (Haryana); M/s. Hindustan Automobile Industries, Circular Road, Rohtak (Haryana); M/s. Andrew Yule & Co. Ltd., Yule House, 8, Clive Row, Calcutta-1 and M/s. Bajaj Steel Industries Pvt. Ltd., Imamabad Road, Nagpur-2.

PRODUCTION OF DISSOLVING AND RAYON PULPS

With the rapid growth of rayon industry in the country, a large quantity of dissolving pulps of various grades is being imported at present. As a measure of import substitution and effective utilization of indigenous raw materials, the National Chemical Laboratory (NCL), Poona, after making thorough investigations and intensive study, has developed two processes for the production of i) dissolving pulp from bamboo (TAP) and ii) rayon pulp from eucalyptus hybrid (APS).

As regards dissolving pulp from bamboo, material of construction can be M.S. or S.S. lined digesters, less time cycle, higher yields and best suited for processing high silicouss raw materials. The pulp is specifically recommended for staple fibre and polynosic fibres. Recent change over of staple to polynosic fibres require cheaper grades of pulp with moderate quality.

Regarding rayon grade pulp from eucalyptus hybrid, highly reactive pulp of different grades can be obtained. The product is specifically recommended for filament rayon and could be modified for tyre cord pulp. It could also be utilized for cellophane.

In the process developed by NCL for the production of dissolving pulp from bamboo chips are fed into digester with sulphate liquor and the mass is heated to the desired temperature. The digester is then brought to atmospheric pressure and the liquor is drained and sent to recovery. The digester is charged with fresh liquor of higher concentration during the second stage. The pulp is then thickened and submitted to a bleaching sequence. Final product is made into sheets, dried and cut into required sizes.

In another process for the production of rayon pulp from eucalyptus hybrid, eucalyptus chips are fed into the digester and heated with dilute sulphuric acid. Pressure is released and the liquor drained. In the second stage, the mass is treated with white sulphate liquor at the required temperature. The pulp is then blown into a tank and subjected to a multi-stage bleachig sequence.

Both the processes have been worked out by the NCL on a pilot plant scale of 100 kg. of chip charges per batch.

There are two untapped bamboo forests in the country, namely, (a) Bastar forest (M.P.) and (b) Assam forest where it is estimated that a complex of 300-350 tonnes per day unit for pulp is possible.

Planned plantations of eucalyptus hybrids have been taken up by many State Governments. One mill in U.P. is expected to come on this raw material soon. It is estimated that by 1980-81, 400 tonnes per day of rayon grade pulp could be produced from this material.

Both the pulps have been tested extensively by the NCL and outside and have been found to meet the required specifications.

At present, M/s. Gwalior Rayon is the only firm which is producing pulp suitable for viscose rayon industry and its unit at Mavoor, Kerala, has a capacity of 60,000 tonnes per year of pulp using bamboo and mixed hardwoods. The company is also setting up another unit at Harihar in Mysore with annual capacity of 36,000 tonnes per year with eucalyptus and bamboo as the raw materials. South India Viscose is also establishing a pulp mill with a capacity of 21,600 tonnes per year which will mainly meet its own requirements as well as others. Apart from these units, M/s. Kesoram Rayons, M/s. Century Rayon and M/s. National Rayon have also plans to manufacture rayon grade pulp. Jammu and Kashmir state is also investigating possibilities of setting up a plant based on soft woods available in Kashmir.

The present production of viscose yarn and staple fibre in the country is around 110,000 tonnes per year. The current production of the pulp in the country is around 55,000-60,000 tonnes per year. Slightly less than 50 per cent of the pulp (roughly 50,000 tonnes per year) is still imported. The estimates for 1973-74 for rayon filament are 64,000 tonnes and for staple fibre 90,000 tonnes. The 4th plan target for pulp production is 1,80,000 tonnes.

A capacity of 33,000 tonnes per year for each of the TAP and APS processes has bes assumed.

PRODUCTION OF TITANIUM ALLOY POWDERS

One of the promising structural materials to emerge in this decade is titanium. The fourth most abundant element in the earth's crust, titanium has all the desirable properties: it has a strength-to-weight ratio higher than that of steel, excellent resistance to corrosion, and a high melting point. All these properties individually, or in combination; make titanium a very attractive material for engineering application both in aeronautical industry, where the specific weight is of importance, and in other industries as well.

Titanium is being used increasingly in aircraft industry. Its light weight and high temperature capability make it an attractive material for air frames, structures as well as aeroengines. In U.S.A. alone, about 10,000 tonnes of titanium are being used annually in aerospace industry. Titanium is also beginning to be used increasingly in chemical industries. In USSR 80 per cent of the annual production of titanium is used in chemical industries. Titanium has a longer service life and has a better resistance to corrosion attack in aggressive environments compared to its rivals, stainless steel and nickel alloys. The global annual production of titanium is estimated at 40,000 tonnes and is expected to increase considerably in the near future.

India has vast reserves of titanium. Ores occur as ilmenite, and reserves are estimated at 300 million tonnes. These are found mainly in the beach sands of Kerala and Tamil Nadu. Titanium metal production is now being attempted on a small scale and a pilot plant to study the feasibility of various routes for the metal production is being established at the Nuclear Fuel Complex, Hyderabad.

In order to make titanium a very useful structural material in the national economy, attempts must be made to reduce the cost of the metal. The high price of titanium is partly due to the difficulty of melting a reactive metal and fabricating it and also due to the difficulty of re-utilizing the scarp. This is a serious problem as it is estimated that sometimes 80 per cent of the metal ends as scrap. This can be avioded if titanium structural parts could be fabricated through the powder route. Powder metallurgy techniques reduce the scrap problem considerably as there is practically no wastage. The main difficulty in choosing this route is the production of high-purity titanium powder. Because of its extreme reactivity, fine titanium powder gets quickly contaminated with oxygen, the main impurity. The National Aeronautical Laboratory (NAL), Bangalore, is now working on the production of titanium powder of good reproducible quality. A novel electron beam set-up, called electron beam splatting furnace, has been designed and built. Sponge titanium is melted in an electron beam furnace and molten drops are frozen quickly into fine flakes. These are then mechanically alloyed and comminuted by a novel set-up, designed and built at this laboratory. Both these equipment are the first of their kind to be built in the country. It is hoped that by the use of this technique it would be possible to produce titanium alloy powder which can subsequently be consolidated and sintered. This route hast he possibility of reducing the cost of the finished products considerably. Another potential application of the electron beam splatting furnace would be in the recycling of the scrap. By careful alloying additions, the impurity contents could be reduced to acceptable level. The furnace is capable of producing about a kilogram of powder in a single operation and can be operated almost semi-continuously. Development of powder metallurgy techniques and cheap commercial alloys of titanium auger well for titanium becoming a useful structural material, next only to steel and aluminium. Research and development activities on titanium at NAL are directed towards this end.

APPLIED AND DEVELOPMENTAL RESEARCH IN CHEMICALS

PROGRESS OF A RESEARCH UNIT

The Regional Research Laboratory (RRL), Hyderabad is mainly concerned with research work aimed at development of chemical process know-how. Besides this, the laboratory undertakes work on utilization of raw materials, and solution of technical problems faced by industry. The laboratory also acts as a technical consultant to many industries located in and around Hyderabad. The emphasis is on applied and developmental research.

The main fields of research at Regional Research Laboratory, Hyderabad are: Oils and Fats; Surface Coatings; Coal; Organic Chemicals and Pesticides; Mineral Products and Inorganic Chemicals; Industrial Ceramics; Cellulose and Paper; Biochemistry; Entomology; X-Ray Crystallorgraphy and Chemical Engineering.

In the field of oils and fats, cottonseed and castor have been chosen for detailed study, since these are two of the major oilseed sources available in the country, specially in Andhra Pradesh and adjoining areas. All aspects of processing of cottonseed have been studied in detail including delinting, dehulling, pressing, solvent extraction and refining of the oil. A pre-press solvent extraction method has been worked out for production of edible-grade cottonseed flour. Even a better product suitable as edible flour has been developed using liquid-cyclone separation technique. The flour could form an important source in meeting the much needed protein requirements in vegetarian diets. Also, since it contains the growth promoting amino acid, lysine, it is specially useful for children. The flour produced in the pilot plant is in great demand by the antibiotic (tetracycline) industry for use as a fermentation medium replacing imported material. Castor oil is a major oil produced in the country, but largely exported. Processes have been worked out for its utilization to produce hydrogenated castor oil (for use in high pressure lubricants), dehydrated caster oil (high grade paint medium), tristearin (tallow substitute) and monoglycerides and sulphated esters (special emulsifiers).

In the field of surface coatings, major attention has been directed towards utilization of indigenously available materials in the paint industry, replacing imported materials. Extensive work has been done in the utilization of cashewnut shell liquid (CNSL), a dark coloured liquid obtained as a bye-product in the processing of cashewnuts. On distillation, CNSL gives cardanol, which is a light coloured product. Coatings can be prepared from cardanol, which are useful as anti-corrosive paints and as food can lacquers. Commercial plants have been set up, one in Hyderabad and the other in Bombay for the production of cardanol and other CNSL based products. A composite aluminium-zinc oxide primer has been prepared as a substitute for red lead (which is based on imported lead) for use in anti-corrosive coatings for structural steel.

Utilization of non-coking coals abundantly available in the region is one of the major fields of activity of the laboratory. Technical, design and economic data have been obtained from the operation of a 25 tonne/day low temperature carbonization (LTC) pilot plant, which are invaluable in the establishment of large scale plants. The semicoke obtained from the plant has been found to be a cheap, smokeless, domestic fuel and is regularly marketed under the name 'Kolsit'. A commercial LTC plant based on Singareni Coal is going to be set up in Andhra Pradesh in the public sector. The importance of LTC lies in providing a cheap substitute for charcoal and firewood, which are the major domestic fuels now in use but derived from forest resources. The extensive denudation of forests, besides destruction of valuable forest wealth, is leading to soil erosion, loss of soil fertility and food production and adverse climatic conditions.

RRL(H) has acquired considerable expertise in developing know-how for production of organic chemicals and intermediates. Examples of such products for which processes have already been worked out are—benzyl chloride, benzyl alcohol, benzyl acetate, benzotri-chloride, benzyl cyanide, phenylacetic acid, phenyl acetamide etc. Two commercial plants have been set up and are producing these chemicals, one at Hyderabad and the other at Daurala in U.P. These chemicals which are widely used as intermediates in the manufacture of drugs, dyestuffs and perfumery products were hitherto, more or less, entirely imported and with the setting up of these plants the country has now become fully self-sufficient. 'Organic chemicals and intermediates' is a growing area of activity of the Laboratory, with industry increasingly sponsoring projects for research and development work. Under such sponsorship schemes, know-how for the following intermediates has been developed: Perfumery chemicals; sodium cyclamate (sweetening agent); clofibrate, diazepam, chlordiazepoxide and 5-chloro-7-iodo-8 hydroxy quinoline (all used in drugs). Work on pesticides has also been taken up as a major item on the research programme of the laboratory.

In the field of 'Mineral Products', extensive work has been done on absorbents-bleaching earths and activated carbons. These are used principally for removal of colour, but there are many other uses also. Several Fuller's earth deposits available in different parts of the country have been evaluated for their suitability for the production of activated earths. Based on the process developed here for activation, one unit has been manufacturing activated earths near Gulbarga for several years now and another is being set up at Hyderabad. Technology has been worked out for the production of active carbons, starting from various carbonaceous materials such as coal, lignite, wood charcoals etc. Active carbons are widely used for a number of applications like decolourisation of vegetable oils, chemical and pharmaceutical solutions and removal of obnoxious gases. An activated carbon plant based on pine char as the raw material has been set up and is in production at Nalagarh in Himachal Pradesh. Processes have also been worked out for production of active carbons using the agricultural wastes-coconut shell and rice husk.

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Process know-how has been developed for the following inorganic chemicals : sodium azide (a detonating agent), anhydrous calcium sulphate (an efficient desiccant), x-ray grade barium sulphale (used in X-ray diagnosis), kaolin B.P. (used in pharmaceutical preparations), barium potassium chromate (an anticorrosive pigment), cadmium sulphide orange (a yellow pigment) and precipitated calcium carbonate (used in paper, rubber and paint industries).

In the field of 'Industrial Ceramics', a process for production of silicon carbide, a strategic material required in a wide range of applications, the most important being in abrasives, has been successfully developed. A commercial plant is being set up in Orissa on the basis of this know-how.

Special grades of papers like filter paper (qualitative grade), drawing, document papers etc. have been developed, which are in production. Developmental work on ashless filter papers, industrial filter pads and mica paper is in progress.

Besides development of process know-how for the establishment of new industries, the laboratory has been rendering technical service to industry in several ways. The Laboratory has acted as a General technical consultant to a number of industries in Andhra Pradesh. Technical advice is also given to a large number of entrepreneurs who are interested in starting new chemical industries, as well as to the Government organisations. □

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SIZEABLE EXPORT ORDER FOR BOILERS SECURED

M/s. Bharat Heavy Electricals Limited (BHEL), have once again, bagged export orders for boilers from Malaysia. The orders, valued at Rs. 130 million, have been secured in the face of keen competition from leading boiler manufacturers the world over including those from the United Kingdom, Federal Republic of Germany and Japan.

BHEL is to supply these boilers of 840,000 lbs/hour capacity and ancillary plants for installation in the Tuanku Ja'afar Power Station and Sultan Power Station - the major power projects - in Malaysia. The supplies are to be effected by the Tiruchirapalli plant of BHEL, according to stringent specifications required.

Earlier, BHEL had supplied the National Electricity Board of Malaysia a 30 MW boiler (300,000 lbs per hour) and ancillary plant for the Sultan Ismail Power Station in Malaysia at a value of about Rs. 4 million. This order too had been secured by BHEL against keen competition from Japan, United Kingdom and Federal Republic of Germany. Prior to this order, BHEL secured two contracts from the same country-one relating to the supply of two 60 MW boilers for Tuanku Ja'afar Power Station stage II and the other pertaining to the supply of three numbers of 120 MW for the same station (stage III).

That India-made steam generating boilers have gained unprecedented popularity in world markets is to be justged by the fact that their export at about Rs. 15.5 million even in the first half of 1973-74 (April-September 1973) has far exceeded the total foreign exchange earned through their overseas supply (Rs. 13.25 million) in the full years of 1971-72 and 1972-73 placed together.

The significance of Malaysian market for these Indian supplies can be noted from Malaysia's accounting for Rs. 14.30 million in India's total export value for the item in the first half of 1973-74. Singapore was the next best importing destination during the period.

During 1972-73 also, Malaysia topped that list of buyers which imported worth Rs. 6.23 million of the total exports during the year at Rs. 6.60 million. Sudan and Afghanistan were prominent among other buyers.

Besides steam generating boilers, India's export range in boilers includes central heating boilers, domestic boilers and boiler house plants and parts.

Boiler manufacturing technology in India has by now reached a stage which enabled the country to produce a variety of boilers catering to the requirements of different sectors of industrial field. Indian boilers particularly cater to the needs of developing countries, as India being one of such economies itself, has built up technical expertise and competence to manufacture these, keeping in view exact requirements of growing economy.

In the organised sector, there were 13 units engaged in the manufacture of boilers and boiler mountings in 1972. As against the installed capacity of 1.3 million KW (MKW) of a value of Rs. 133 million, their production during the year was estimated at Rs. 500 million. The range of production includes boilers, such as, small package boilers, industrial boilers. waste heat boilers and thermal station boilers. In the field of thermal station boilers, from the present 100 MW boilers, the range has now increased upto 200 MW boilers.

EXPORT OF TECHNICAL CONSULTANCY SERVICES

Indian industry has established itself in several areas of modern manufacture and has even come to spare its technical consultancy services for export. The example of the National Industrial Development Corporation (NIDC) in this context deserves mention.

The consultancy services of NIDC have gained growing recognition in developing countries. It has also extended its consultancy services to the pulp and paper industry and entered into a technical collaboration agreement with M/s. H. A. Simons Ltd. of Canada, one of the leading pulp and paper consultants in the world to keep pace with the technological innovation taking place in the industry.

NIDC have recently signed a collaboration agreement with the National Development Corporation of Tanzania for providing consultancy services. Nepal Industrial Development Corporation has also utilised the services of NIDC for a number of their major industrial projects to be set up in Nepal. The United Nations continues to utilise the services of the Corporation for important long range industry planning studies in Iran. The Corporation's collaboration in setting up steel melting and billet casting plant in Libya is in progress.

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NIDC's foreign exchange earning through its supply of technical consultancy amounted to Rs. 4.9 million (upto March 1973).

INDIAN FLOUR MACHINERY AND KNOW-HOW TO FIJI

Recently, M/s. Wallace Flour Mills Limited, 9, Wallace Street, Fort Bombay, one of the firms engaged in erection of flour mill plants, received an assignment from the flour mill at Suva in Fiji Islands to supply the machinery and technical know-how for setting up a flour mill plant in that country. The work relating to detailed engineering for electrical installations in the plant had been entrusted to M/s. Siemens India Limited, 130, Worli, Bombay-18. Besides looking after the electrical aspect, M/s. Siemens are also to supply L. T. switch boards, control boards, lighting materials and motors for the mill.

India offers a wide variety of food processing machinery to markets the world over. During 1972-73, the exports in the line brought in Rs. 11.76 million which were more or less the same as in the preceding year at Rs. 11.80 million.

During 1972-73, flour mill machinery parts and accessories, rice mill machinery, parts and accessories, sugarcane crushing machinery, bakery/confectionery manufacturing machinery, machinery for macroni or cereal food manufacturing, sugar manufacturing machinery and other machinery in the line were supplied abroad.

Nigeria, Bangladesh, Afghanistan and Fiji Islands were the principal importing destinations for flour mill machinery and accessories while Philippines, Sri Lanka and Nepal were the leading markets for rice mill machinery and parts. Machinery used in bread grain milling was imported by about 8 markets while sugarcane crushers were bought by over a dozen countries in which Uganda, Nigeria, Liberia and Ghana were significant. Sugar manufacturing machinery was mainly purchased by Uganda and Federal Republic of Germany.

AUTOMOTIVE TYRES AND TUBES ON EXPORT STREAM

India's tyres and tubes industry has achieved appreciable progress in recent years although about two decades back the country depended heavily on the imports of automotive tyres and tubes. Having to its credit, today, the manufacture of a variety of tyres and tubes catering to the requirements of different types of vehicles, the industry not only meets the growing home demand but leaves sizeable surplus for exports. Indian exports of automotive tyres and tubes are valued at Rs. 57 million (1972-73). The exports in 1971-72 were even higher at Rs. 70 million.

During 1972-73, tyres of different types secured Rs. 52.35 million while tubes brought in Rs. 3.88 million. The varietywise composition of tyre exports during the year was : tyres for trucks and buses Rs. 38.85 million; cycle tyres Rs. 4.90 million; tyres for off the road vehicles Rs. 4.75 million; motor tyres Rs. 2.10 million and tractor tyres Rs. 1.20 million. Apart from these, tyre flaps, solid rubber tyres and tyres for other vehicles were also exported in the year.

Yugoslavia, Czechoslovakia, Iraq, Korea Republic, Kuwait, Sudan, USA, Bangladesh and Guyana were the principal importing markets.

In the area of tubes, the largest single variety active in exports during the year pertained to tubes for trucks and buses. It fetched Rs. 2.38 million. Cycle tubes which constituted the next best variety active in export in the year secured Rs. 1.80 million. Besides these main varieties, motor tubes, off the road vehicle tubes, tractor tubes, tubes for motor cycles and tubes for other vehicles too figured in the exports. These were mainly bought by USA, Czechoslovakia, Yugoslavia Iraq, Sudan, USSR, Afghanistan, Peru, Austria and Puerto Rico.

Contributing to the export efforts of India's tyres and tubes industry during 1972-73, M/s. Dunlop India Limited, Chittaranjan Avenue, Calcutta-16, exported automotive tyres and tubes and other rubber products at a value of Rs. 33.30 million. The firm's products were directed to as many as 87 countries during the year amongst which France, New Zealand and Somali Republic were the specific markets where the firm introduced its products for the first time.

Besides automotive tyres and tubes of different types, the firm supplied to these countries cycle rims, vee belts, transmission beltings and rubber solution. The firm's production range of tyres includes even tyres for aeroplanes which also figured in exports during the year. They have also developed a special range of cycle tyres exclusively for export purpose. These are in growing demand in the United States. In the preceding year, the Calcutta firm exported these products at a value of Rs. 32.20 million to about 80 countries including the sophisticated economies like the USA and UK. In that year, Bangladesh, Bulgaria, Trucial Oman and Mozambique were the new additions to their list of overseas customers.

The firm has been declared an 'Export House'. They have diversified their export range. In the preceding year, for instance. they supplied sports goods to the UK and bicycle components to quite a few countries.

During 1972, in the organised sector, the production of tyres and tubes industry comprised : giant tyres 2.40 million numbers (installed capacity 2.20 million numbers); giant tubes 2.30 million numbers (2.20 million numbers); motor tyres 1.30 million numbers (1 million numbers); motor tubes 1.40 million numbers (1 million numbers); motor cycle tyres 150,000 numbers (200,000 numbers); motor cycle tubes 225,000 numbers (200,000 numbers); bicycle tubes 14.60 million numbers (28.95 million numbers); bicycle tyres 22.40 million numbers (31.80 million numbers); scooter tyres 500,000 numbers (450,000 numbers) and scooter tubes 380,000 numbers (450,000 numbers). The tyres and tubes industry consumes annually more than 50 per cent of the entire rubber production in India.

EXPORT PERFORMANCE AND POTENTIAL

INDIA'S EXPORT PROMOTION POLICIES

A REVIEW

To meet emerging developments in the international trade scene, the Government of India have been re-shaping their policy frame-work with an ultimate objective of maximising the country's export earnings. Having attained a 22 per cent improvement in its export value in 1972-73 over 1971-72, the Indian economy has succeeded in further improving the growth rate in exports by about 21.6 per cent in the first three-quarters of 1973-74 (April-December, 1973) over the corresponding period of the preceding year. All the same, the economy witnessed a 44.3 per cent increase in its imports during this period (April-December 1973) compared with the same period of the preceding year and, in effect, the country has had an adverse balance of trade amounting to Rs. 940 million as compared to a surplus of over Rs. 1540 million in the corresponding period of the year before. India's balance of trade position from 1968-69 to 1973-74 can be presented as below :—

(Rs. in million)

Year	Imports (cif)	Exports including re-exports (fob)	Balance of trade
1968-69	19,086	13,579	—5507
1969-70	15,827	14,133	—1694
1970-71	16,342	15,352	— 990
1971-72	18,245	16,082	—2163
1972-73	17,967	19,609	+1642*
April-Dec. 1972-73	12,367	13,910	+1543*
*April-Dec. 1973-74	17,850	16,913	— 937

*Provisional

While the export performance has presented an encouraging trend notwithstanding several supply constraints at home, the sharp increase in imports was mainly caused by large purchase of foodgrains coupled with inflationary trend in international prices of crucial import items, such as, crude oil, petroleum products, steel and non-ferrous metals, fertilisers and newsprint. The recent oil crisis has proved to be a new challenge. The Government of India have, therefore, devised special programmes for promoting exports to the oil exporting countries in addition to the general efforts being made to maximise the export supplies to various countries in the world.

The Annual Report (1973-74) of the Ministry of Commerce has enumerated the various measures devised by the Government of India with special emphasis on maximizing production for export and encouraging import substitution. A keen policy of restricting imports of those commodities whose domestic production has increased is being followed to extend the scope for import substitution/restriction. At the same time, the import policy measures aim at assuring adequate and timely supply of major inputs that are essential for expansion and diversification of export production as also for meeting the requirements of priority and small scale industries, particularly those whose development strengthens the balance of payments.

Aside from the special export promotion measures already in force–including financial assistance and incentives, transport facilities and other institutional arrangements - a Buyers' Credit Scheme for granting credits directly to foreign importers in connection with the export of capital goods was introduced by the Industrial Development Bank of India in December 1973. A separate Department of Export Production has also been created in the Ministry to expeditiously attend to the problems of capacity augmentation and input production. Applications for capacity creation/expansion in manufacturing lines with promises for releasing export surpluses, are accorded fullest consideration.

Bi-lateral economic and trade relations are also being strengthened through the establishment of Joint Committees and Commissions between India and other trading areas. A Commercial Cooperation Agreement was signed with European Economic Community (December 1973) and a Joint Commission has been established to explore further avenues of economic and commercial cooperation. In the GATT negotiations for a new arrangement in world textile trade, India was an active participant and a new agreement has already been signed (December 1973) specially providing for the trade of the developing countries in textiles. India's trade with the socialist bloc under the existing bilateral arrangements have not only helped the economy to meet her essential import requirements but also diversify its export structure. Further areas of economic and commercial cooperation are being explored with other developing countries, particularly of South East Asia, Far East and West Asia. In respect of trading with oil producing countries, the Minister of Commerce took a meeting in early February 1974 of India's commercial representatives in West Asia, to evolve a strategy for boosting the country's exports to the region. The forthcoming multi-lateral trade negotiations to be held in Geneva aim at removal/liberalisation of tariff barriers and other obstacles to the free flow of world trade. This forum would give India another opportunity for seeking reductions in tariff and non-tariff barriers affecting her trade.

The Ministry's Annual Report has also reviewed the various efforts made to implement the national Export Policy Resolution (1970). In line with the Resolution's emphasis on the agricultural sector, domestic production of cotton, jute, spices, cashew, tobacco, sugarcane and tea has received a boost. The other major areas of export production specificied in the Resolution such as fisheries, fruits and vegetables, handicrafts, handlooms and minerals have also received attention of the various departments of the Government with a view to enable these sectors to improve their contribution to the export sector.

In the field of engineering goods, the constant endeavour of the Commerce Ministry has been to increase the unit value realisation on their exports. Having regard to the fact that quite substantial amount is being spent on imported inputs like steel, it was decided in June, 1973 that imported steel for export production would be made available only in respect of those export contracts where the f.o.b. value through the export would be at least 25 per cent higher than the c.i.f. import price of all steel materials required for export production irrespective whether the steel material is obtained from indigenous or imported supplies. Many Indian exporters have been able to re-negotiate with the foreign buyers and achieved higher prices for the contracts already concluded.

To step up industrial production for improving exports, Indian Government liberalised its import policy for 1973-74. Major aspects of the liberalistaion related to priority treatment in the matter of allocation of imported raw materials and components; need-based replenishment of imported raw materials for meeting the priority industry requirements; steel imports for export production, special facilities for small scale industries; and procedural simplifications. Progress in implementing the Export Policy Resolution can also be measured in terms of export finance, quality control, increasing role of public sector agencies and improved shipping facilities.

Thus, India's trade policy continues to be export oriented with greater allocation of inputs for export production and emphasis on import substitution. The country's exports witnessed a continuous rise throughout the period of Fourth Five Year Plan. During the first four years of the Plan, the growth rate varied from 4.1 per cent in 1969-70 to 22 per cent in 1972-73. In the first three quarters of 1973-74 too, the growth rate (21.6 per cent) was notable. On the basis of these trends, the exports are expected to exceed the target of 7 per cent rate of growth envisaged in the Fourth Plan.

EXPORTS OF NON-TRADITIONAL ITEMS TO U.S.A.

India for the first time had a favourable balance of trade with the U.S.A. in 1972-73. During the year, India's exports amounted to Rs. 2757.4 million as against Rs. 2630.8 million during 1971-72. In 1970-71, India's exports to U.S.A. fetched Rs. 2073.4 million.

As against India's exports to U.S.A. during the last three financial years, India's imports during 1970-71, 1971-72 and 1972-73 were of the order of Rs. 4529.5 million, Rs. 4165.2 million and Rs. 2245.8 million respectively. Thus, India's exports to U.S.A. have been on the increase and Indian imports from U.S.A. have declined considerably.

In the past, India's exports to U.S.A. were mostly of traditional items like jute manufactures, tea, cashewnuts, textiles, carpets etc. It is only in the recent years that some diversification in the product coverage is coming about with the emergence of engineering goods as large foreign exchange earners. Efforts are also being made to export other non-traditional items, such as, plastics and leather garments. The crash plan being implemented by the Trade Development Authority (since 1972-73) deserves mention in this connection. This plan envisages development of exports from India to U.S.A. of eighteen selected products—readymade garments; leather apparel and accessories; handbags, wallets and travel goods; art metalware and wood work; household glassware; porcelain crockery; sports goods including toys and dolls; miniature bulbs in strings for Christmas decoration; flatware; plastic products; industrial fasteners of iron and steel, ferrous castings and forgings (unworked); radio broadcast receivers and components; padlocks, locks and door and window hinges and other fittings; hand tools and small cutting tools; bicycles and components; fencing components and petroleum flanges. The export of these products from India to U.S.A. in 1970-71 was of the order of Rs. 77 million. Their export from India to U.S.A. is expected to be raised to Rs. 525 million in 1974-75. The export target fixed for the year 1973-74 under this plan is Rs. 287.5 million. As against this, the actual shipments by TDA's clients amounted to Rs. 126.6 million during April-December 1973 and orders for Rs. 196.2 million are on hand.

The commodities in which India's exports have shown substantial increases is 1972-73 are : marine products, coffee, opium crude, castor oil, leather and manufactures of leather, coir yarn and manufactures, oriental carpets, cotton fabrics, gems and jewellery and bicycles.

RECENT TRENDS IN INDIA'S EXPORT TRADE

India's exports, excluding re-exports, totalled Rs. 10,729.26 million during the first six months of 1973-74 (April-September, 1973) registering an increase of over Rs. 1,591 million over the export performance at Rs. 9,138.18 million during the corresponding period of 1972-73.

A wide variety of products contributed to this increased earning. The overall export value of food and animal group improved to Rs. 3,038.78 million in the period under review of 1973-74 from Rs. 2,514.54 million in the same period of 1972-73. Item-wise, marine products registered a substantial uptrend to the level of Rs. 412.27 million from Rs 282.40 million. The export earning of meat and meat preparations was up at Rs. 21.50 million from a mere Rs. 8.42 million. Fruits and vegetables including fresh fruits, dried fruits and nuts fetched more at Rs. 508 million as against Rs. 446.66 million. Spices, one of the prominent exportable items, nearly doubled their foreign exchange earning to Rs. 203.23 million from Rs. 114.84 million. Overseas supply of coffee also improved to Rs. 263.74 million as compared to Rs. 160.20 million in the comparable period of 1972-73. Even feeding stuff for animals fetched more at Rs. 942.95 million as against Rs. 287.59 million. In fact, in the food and animal group, tea was the only significant item which suffered a decline at Rs. 599.72 million as compared to Rs. 758.80 million in the first six months of 1972-73. The export earning of dairy products and cereals and cereal preparations was also less.

Among inedible crude materials, oil seeds, oil nuts and kernels doubled their export earning to Rs. 59 million in comparison to Rs. 29.74 million while wood lumber and cork fetched more at Rs. 106.30 million as against Rs. 48.23 million. Among textile fibres and waste, cotton was fairly active in export markets, having brought in Rs. 145.26 million against Rs. 132.47 million. Wool and other animal hair accounted for Rs. 43.45 million against Rs. 26.21 million. Jute fibre, however, witnessed a decline at Rs. 4.41 million from the earlier level of Rs. 24.85 million. Metalliferrous ores and metal scrap improved their foreign exchange earning to Rs. 653.46 million from Rs. 480.69 million, mainly due to the increased offtake of iron ore and concentrates (Rs. 551.95 million against Rs. 419.14 million) and iron and steel scrap (Rs. 14.30 million against Rs. 5 million). The total earning of the group on the whole was up at Rs. 1,390.43 million compared to Rs. 1,134.74 million.

The group of chemicals also revealed a slight improvement to Rs. 194.80 million from Rs. 187.11 million. This was mainly due to gain in export value of medicinal and pharmaceutical products (Rs. 50.86 million against Rs. 40.22 million). The earning of dyeing, tanning and colouring materials was more or less constant at Rs. 43 million in the comparable periods. Chemical elements and compounds including organic chemicals, inorganic chemicals, oxides and halogen salts, however, suffered a set-back at Rs. 40.47 million from Rs. 42.62 million. The performance of essential oils and perfume materials also witnessed marginal decline at Rs. 48.91 million against Rs. 50.62 million.

Among the manufactured products, several categories showed trends of export dynamism. Leather and leather manufactures which earned Rs. 720.68 million in the first six months of 1972-73 in foreign markets stepped up their earning to Rs. 933 million in the same period of the following year. Wood and cork manufactures, paper, paper board and manufactures, glass and glassware also saw a sizeable export improvement. The foreign exchange earning of pearls, precious and semi-precious stones was at Rs. 347.16 million and Rs. 344.39 million respectively in the comparable periods of 1973-74 and 1972-73.

An appreciable improvement also took place in respect of textile yarn and fabrics. These fetched nearly Rs. 2,442.50 million against Rs. 2,270.22 million. Cotton manufactures (excluding yarn, thread and clothing) were exported to the tune of Rs. 945.42 million as compared to Rs. 562.71 million. The other items in the section which registered improvement were floor coverings, tapestries, other than cotton and jute (Rs. 139.49 million against Rs. 121.98 million) and textile fabrics excluding cotton and jute fabrics (Rs. 114.98 million against Rs. 67.20 million). Had it not been for a fall in exports of textile yarn and thread (Rs. 127.51 million against Rs. 178.19 million) and jute manufactures (Rs. 1,105.42 million against Rs. 1,332.47 million), the improvement in foreign exchange earning of this section would have been more appreciable.

The iron and steel section also gave a better account of itself during the period under review of 1973-74. Most of the specific categories in this section (excepting iron and steel bars, rods, angles, shapes, universals, plates and sheets and hoops and strips) registered improvement. Export of pig iron and sponge iron fetched Rs. 129.23 million against Rs. 98 million. Ingots and other primary forms of iron and steel earned about Rs. 10 million in contrast to only Rs. 2.69 million in the comparable period of 1972-73. Rails and railway track construction material of iron or steel more than doubled their earning at Rs. 22.85 million as against Rs. 10.67 million. Exports of iron and steel tubes, pipes and fittings also looked up at Rs. 72.35 million from Rs. 62.15 million.

The export earning of non-ferrous metals was also up at Rs. 44.77 million against Rs. 37.40 million. The increase was mainly due to increased offtake of copper at Rs. 24 million against Rs. 16.57 million.

As in the case of iron and steel and non-ferrous metals exports, non-electrical machinery also witnessed an increase to Rs. 200.27 million from Rs. 130.62 million. With one single exception of textile and leather machinery, all categories in this group registred improvement. Non-electrical power generating machinery, for instance, recorded an export value of Rs. 57.98 million against Rs. 36.42 million; office machine exports rose to more than Rs. 15.10 million from Rs. 4.63 million; metal working machinery fetched Rs. 14.26 million against Rs. 9 million; machines for special industries Rs. 21 million against Rs. 12.30 million and agricultural machinery and implements Rs. 4.73 million against Rs. 1.70 million.

While the entire group of electrical machinery, apparatus and appliances earned less at Rs. 113.93 million compared to Rs. 122.59 million, specific categories compensated to some extent for the loss incurred in other items. For instance, oversease supplies of electrical power machinery and switchgear, got a fillip at Rs. 30.51 million against Rs. 26.13 million.

As regards transport equipment, road vehicles (other than motor vehicles)-mainly bicycles, constituted a group of consistent export expansion. Their exports totalled Rs. 60 million and Rs. 48.71 million in the comparable periods. The offtake of railway vehicles was up at Rs. 29.60 million against Rs. 11 million, registering more than 100 per cent increase. Interestingly, even aircrafts also figured in the export list and earned more at Rs. 2.96 million compared to Rs. 1.30 million. Export value of road motor vehicles, however, fell to Rs. 50.70 million from Rs. 55 million.

Among the other manufactured goods, the overseas sale of clothing (excluding fur clothing) improved to Rs. 308.61 million from Rs. 278.66 million. Similar uptrend was also noted in case of travel goods and hand bags which improved their earning to Rs. 15.92 million against Rs. 11.56 million,

Direction-wise, the African region imported India's products worth Rs. 416.19 million in the first six months of 1973-74 as against Rs. 517.37 million in the same period of 1972-73. The offtake of North American region including U.S.A. and Canada was Rs. 1,535.79 million and Rs. 1,619.76 million respectively in the two periods. U.S.A. absorbed goods worth Rs. 1,398.16 million against Rs. 1,451.42 million while Canada's intake was Rs. 137.63 million against Rs. 168.34 million. The Latin American continent absorbed more at Rs. 34.33 million against Rs. 26 million. In the Asian region, ECAFE countries also imported more at Rs. 3,017.44 million in comparison to Rs. 2,198.38 million. Japan, particularly, improved her purchases to the tune of Rs. 1,683.54 million from Rs. 939.64 million.

The East European region which marks a major area of India's export growth imported Indian goods worth Rs. 2,459.54 million as against Rs. 2,262.95 million in the comparable period of 1972-73. The offtake of Hungary particularly improved from only Rs. 64.38

million to about Rs. 116.63 million. USSR, Yugoslavia, Bulgaria, GDR, and Poland were other markets where Indian exports registered sizeable increase. The intake of Czechoslovakia was, however, considerably less at Rs. 178.58 million against Rs. 232.25 million.

In West Europe, the ECM countries absorbed as much as Rs. 1,333.38 million against Rs. 935.71 million. The major markets that were responsible for the increase were the Federal Republic of Germany (Rs. 403.21 million against Rs. 300.53 million), France (Rs. 208,23 million against Rs. 191.76 million), Italy (Rs. 337.58 million as compared to Rs. 197.50 million), Netherlands (Rs. 238.45 million against Rs. 135 million) and Belgium (Rs. 145.90 million as against Rs. 110.86 million). The United Kingdom also increased its offtake to the tune of Rs. 1,185.71 million in comparison with Rs. 909.78 million. The offtake of EFTA countries including Austria, Denmark, Norway, Portugal, Sweden and Switzerland was also up at Rs. 172.65 million compared to Rs. 159.78 million in the corresponding period of 1972-73.

EXPORT POSITION IN COIR GOODS

India's export of coir and coir goods maintained more or less the same export trend during the first three quarters of 1973-74 (April-December 1973) as was evident during the same period of the preceding year. The exports were of the order of Rs. 112.15 million as compared to nearly Rs. 112 million during the respective periods. The unit value per quintal, however, has gone up during April-December 1973 over that in the corresponding period of 1972-73. The quantum-wise supply position during the periods was 337,372 quintals and 374,264 quintals respectively.

Itemwise, the export position was: coir mats 98,794 quintals at Rs. 45.15 million (April-December 73) as against 95,023 quintals at Rs. 38.90 million (April-December 72); coir yarn 202,132 quintals at Rs. 55.93 million against 242,652 quintals at Rs. 61.90 million; coir mattings 19,676 quintals at Rs. 7.55 million against 13,714 quintals at Rs. 5.06 million; coir rugs and carpets 4,852 quintals at Rs. 1.88 million against 13,788 quintals at Rs. 4.80 million; curled coir 8,317 quintals at Rs. 1.07 million against 5,976 quintals at Rs. 0.76 million; coir fibre 2,378 quintals at Rs. 0.30 million against 2039 quintals at Rs. 0.33 million; coir rope 1,034 quintals at Rs. 0.21 million against 793 quintals at Rs. 0.13 million; rubberised coir 7 quintals at Rs. 7,368 against 1 quintal at Rs. 1073 and coir other sorts 182 quintals at Rs. 81,416 against 278 quintals at Rs. 0.10 million.

BASIC CHEMICALS AND PHARMACEUTICALS

EXPORTS INCREASE

The prorata export target of Rs. 417 million set for the first 10 months of 1973-74 (April 73 - January 1974) for basic chemicals, pharmaceuticals and soaps etc. has been surpassed by a large margin as the actual exports during the period reached a level of Rs. 555.95 million. According to the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council, Bombay, these exports have outstripped even the target set for the entire year of 1973-74 at Rs. 501 million. In the corresponding periods of the preceding two years (April 72 - January 73 and April 71 to January 72), the exports were valued at Rs. 342.82 million and Rs. 289 million respectively.

During the period under review of 1973-74, the overall exports of the various groups of items registered sizeable increase. For instance, drugs, pharmaceuticals and fine chemicals exports increased sharply to Rs 291.44 million as compared to Rs. 109.16 million in April 72 - January 73. The exports even outstripped the target set for the group for the entire year of 1973-74 at Rs. 160 million. Dyes, intermediates, alcohol and coaltar chemicals constituted another active group in exports which earned Rs. 73.26 million as against Rs. 57.26 million. The export target for the group for the full year has been placed at Rs. 100 million. In the category of chemicals, inorganic chemicals brought in maximum foreign exchange at nearly Rs. 52 million (Rs. 42.23 million in April 72 - January 73) while organic chemicals earned Rs. 7.36 million against Rs. 10.69 million and agro-chemicals Rs. 2.86 million against Rs. 1.55 million. The total export realisation of all these varieties of chemicals during the period is estimated at Rs. 62 million while the target for 1973-74 is set at Rs. 70 million. Essential oils and crude drugs exports too registered improvement at Rs 40.67 million and Rs. 42.77 million respectively as compared to their value in the preceding year at Rs. 31.20 million and Rs. 33.70 million.

The export of glycerine, soaps, detergents, cosmetics and toiletries group, however, registered decline at Rs. 29.43 million as compared to the export value in April 72 - January 73 at Rs. 38.80 million. Similarly exports of agarbattis and that of miscellaneous items too registered marginal fall at Rs. 12.59 million from Rs. 13.94 million and Rs. 3.73 million from Rs. 4.31 million respectively.

The actual exports of these groups during the full year of 1972-73 were : drugs, pharmaceuticals and fine chemicals Rs. 135.30 million; dyes, intermediates, alcohol and coaltar chemicals Rs. 59.47 million; inorganic, organic and agro-chemicals Rs. 67 million; glycerine, soaps, detergents, cosmetics and toiletries Rs. 48.15 million; crude drugs Rs. 43.92 million and agarbattis Rs. 15.85 million.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

INDIA'S INDUSTRIAL PRODUCTION

RETROSPECT AND PROSPECT

Notwithstanding the present uncertainty of import prices of crude oil and other basic raw materials as also the international currency fluctuations, India's industrial production might reveal encouraging trends in 1974 compared to the stagnation in the preceding year, according to the Annual Report of the Ministry of Industrial Development, Government of India (1973-74). The report points out that the prospects for the overall agriculture-based raw materials are bright and good crops would be realised in respect of raw cotton, raw jute, sugarcane and oil seeds. To the extent that much of the industrial production in the country depends on the availability of these basic agricultural raw materials, industrial production in 1974 is stated to hold promise. In respect of three other important inputs for industry, namely, coal, steel and power also the prospects for 1974 are stated to be better than during the preceding year. Coal production is sought to be substantially stepped up from mere 79 million tonnes to around 95 million tonnes. Steel production is expected to improve from the low levels reached in 1973 by about a million tonnes. Power generating capacity is also expected to go up by nearly 1.5 million kw.

India's industrial production during 1973 was stagnant although there was a noticeable increase in the output of many public sector undertakings, particularly in the area of equipment manufacture. The official index of industrial production recorded a marginal decline of 0.8 per cent during the first half of 1973 as against a growth rate of 7.4 per cent achieved in the corresponding period of 1972. The slackness in industrial production was mainly attributed to power shortage, transport bottlenecks which affected the movement of essential inputs like coal, pig iron and cement and a combination of many other factors such as, improper plant maintenance, a temporary flagging of demand for certain items and disturbed industrial relations in certain other industries. Major changes in the world economic scene have also added to the difficulties faced by the Indian industry. World inflationary trends were compounded by fluctuations in exchange rates and there has been a steep increase in the prices of crucial imports of industrial raw materials, such as, petroleum products, steel and non-ferrous metals.

In spite of these difficulties and a general stagnation in industrial production during 1973, there were no doubt certain production gains. Timely monsoon has forecast, a revival in the production of a number of agriculture-based industries, such as, cotton textiles, jute manufactures, sugar and vanaspati. Notable improvement was recorded in respect of performance of a number of important public sector undertakings, especially those manufacturing power generation equipment, machine tools, structurals and heavy fabricated materials.

Many other industries, however, depend on crucial imported inputs of raw materials and components. The outlook in respect of these industries will naturally depend on the extent of foreign exchange availability to meet their production requirements. Furnace oil availability may have to be less during 1974 than in the previous year but increased supplies of coal, for which movement links are being worked out, may ensure coal availability in areas where furnace oil is to be replaced. The production of certain other industries might suffer with steeply increasing prices of imported raw materials, particularly those based on petrochemicals.

"But on the whole, the bulk of industrial production during 1974 appears at this stage to be better than in 1973. The production plans of some of the major public sector undertakings—particularly in the area of power generating equipment manufacture, machine tools, structurals, and heavy fabricated materials and most importantly, fertilizers—together with the better availability of agricultural raw materials, encourage the expectation that industrial production during 1974 may show an improvement over production in 1973".

RECENT MEASURES TO PROMOTE LEATHER INDUSTRY

Keeping in view the important contribution being made by the leather industry to the country's export trade, the Govenment of India have recently devised certain measures for the development and expansion of the industry. These measures have been taken pursuant to the recommendations of a high-powered committee set up by the Government of India.

India has been a traditional exporter of hides and skins. But the present policy of the Indian Government is to restrict these exports and simultaneously encourage the export of processed leather and leather manufactures. To bring about this transformation the leather industry indeed deserves encouragement, particularly in respect of adequate and timely availability of raw materials, machinery and equipment and other inputs.

Among the recent measures that have been devised for the development of the leather industry was the simplification of the industrial licensing procedure so that manufacturers of semi-finished leather could instal capacity to produce finished leather to the full extent of their semi-processed capacity without having to obtain licences for the purpose. Also in the import policy for the registered exporters, exporters of E.I. tanned and chrome hides and skins have been made eligible to secure import replenishment for the purchase of machinery, tools and equipment required for balancing, modernisation and authorised expansion. The list of machinery which is allowed to be imported by registered exporters in the line is under constant revision to meet the emerging requirements of the industry from time to time. Likewise, the list of chemicals and dyes allowed to be imported against replenishment licences has also been expanded.

Apart from revising the industrial and import licensing procedures, the Centre and State Governments have initiated action to set up common facility centres to enable the small tanners to switch over to the production of finished leather. In this connection, the scheme drawn up by the Tamil Nadu Government for granting financial assistance to small units for purchase of machinery and other inputs deserves mention.

FACTS ON MAN-MADE FIBRE INDUSTRY

India's man-made fibre industry produces a variety of synthetic textiles and yarn. In the organised sector, 8 units with an installed capacity of 39,100 tonnes produced (1972) viscose filament yarn at an estimated value of over Rs. 586 million (39,914 tonnes). In the area of viscose staple fibre, the installed capacity of 72,000 tonnes was spread over 2 units and their actual production of 70,337 tonnes was valued at Rs. 339.60 million. In the same year, there were 3 units engaged in the manufacture of viscose tyre yarn/cord with a combined installed capacity of 21,000 tonnes. Their production during the year was at 19,225 tonnes at a value of Rs. 298.50 million.

Apart from these, the number of units, installed capacity and estimated production during 1972 in respect of other items in the industry was : polyester fibre 3 units, 12,650 tonnes and Rs. 159.20 million (7,421 tonnes); nylon filament yarn 6 units, 13,974 tonnes and Rs. 444.30 million (11,831 tonnes); cellulosic film 2 units, 7,000 tonnes and Rs. 92.50 million (6,518 tonnes); polyester filament yarn 2 units, 720 tonnes and Rs. 48.10 million (682 tonnes); nylon tyre cord 2 units, 2,400 tonnes and Rs. 57.30 million (2,090 tonnes) and acetate fibre/yarn 1 unit, 2,000 tonnes and Rs. 32.30 million (1,988 tonnes).

In terms of percentage, capacity utilisation in various lines of manufacture in the man-made industry during 1972 was : viscose filament yarn 102 per cent, viscose staple fibre 83 per cent, acetate yarn and acetate staple fibre 100 per cent, cellulosic film 93 per cent, viscose tyre cord 90 per cent, nylon filament yarn 102 per cent, polyester staple fibre 100 per cent, nylon tyre cord 83 per cent and nylon staple fibre 7 per cent.

The industry has achieved appreciable success in the export field as well. Outstripping the export target set for the entire year of 1973-74 at Rs. 180 million, India's exports of rayon and synthetic textiles fetched foreign exchange as much as Rs. 252.50 million during the first eleven months of 1973-74 (April 1973-February 1974), according to the Rayon Textiles Export Promotion Council, Bombay. On the basis of this uptrend, the exports for the entire year of 1973-74 are estimated to reach the Rs. 300 million mark.

RISING TREND IN CAUSTIC SODA PRODUCTION

Caustic soda industry figures in the list of 'priority' industries in India. Currently, 29 units - 3 in public sector and 26 in private sector—are engaged in the production of caustic soda. Total installed capacity is reckoned at 5,05,000 tonnes for the year 1973-74. It is expected to go upto 1 million tonnes per annum by the end of Fifth Five Year Plan (1974-79).

Actual production of caustic soda has consistently shown a rising trend. During 1972-73, the production was of the order of 0.4 million tonnes as against 0.38 million tonnes in the preceding year. For the first 6 months of 1973-74 (April-September 1973), it was estimated to be around 0.2 million tonnes. Production by the year 1978-79 is targetted at 0.785 million tonnes.

Caustic soda industry is capital intensive and has a low rate of return on investment. Gestation period is long, extending to 4 or 5 years. About 60 per cent of the plant and machinery required by the industry are indigenous and the rest is met out of imports. However, 92 per cent of the inputs going into the production of caustic soda are available within the country. Only mercury, asbestos and some graphite anode are imported. Caustic soda, too, is allowed to be imported by actual users, though the import is canalized through the State Trading Corporation of India. The industry is open for further licensing but foreign collaboration is not preferred.

The industry has also entered the export field, though on a limited scale. The value of such exports was of the order of about Rs. 1 million in 1972-73. Indonesia, Bangladesh and Nepal were the major importers.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PROCESS FOR PRODUCTION OF ACETANILIDE

Acetanilide is an important organic intermediate which finds extensive application in the pharmaceutical industry for the manufacture of sulfa drugs. It is also a valuable intermediate for dyestuffs. The current annual requirement for the manufacture of sulfa drugs alone is estimated at 2000 tonnes. The total annual demand in the near future is expected to be about 4000 tonnes.

As a measure of import substitution, work on the development of a process for the production of acetanilide has been undertaken by the National Chemical Laboratory, Poona. After optimizing the conditions on laboratory scale, a pilot plant of 60 kgs. per batch has been designed and operated successfully. This work has been further scaled upto 100 kgs. per batch which is based on the collection of chemical engineering data. A complete process design of a plant for 2000 tonnes of acetanilide per annum has been prepared. The process in its final form has given a consistent yield of over 98 per cent based on aniline. The product confirms to the strict specifications of the Indian Standards Institution and also of many leading manufacturing houses.

When M/s. Hindustan Organic Chemicals Ltd. (HOC), Rasayani invited tenders for a plant of 2000 tonnes per annum capacity, the NCL offered this process through M/s. R. L. Dalal and Co., a firm of project engineers in Bombay. It is noteworthy that the tenders submitted by this project engineering firm based on NCL know-how and process design was adjudged the best among the global tenders received. This was indeed a landmark in the history of the Indian Chemical Industry, and may be regarded as the first instance when a national laboratory and a private engineering firm joined hands in successfully developing and offering a much needed know-how. Upto March 1973, the acetanilide plant at HOC, Rasayani has produced 4605.75 tonnes of acetanilide valued at Rs. 33.44 million. In terms of import substitution, the production of 2000 TPA of acetanilide will result in a saving of Rs. 7.5 million every year. In view of the increasing demand, HOC have plans to double their acetanilide production.

ELECTRONIC MOISTURE METER DESIGNED

The South India Textile Research Association, Coimbatore Aerodrome P.O., Coimbatore-14, has recently designed a quick and accurate electronic moisture meter for determining the moisture content in textile materials, such as, cotton, cotton yarn and cotton seed. This meter is expected to serve as a substitute to the imported ones from UK, USA and USSR.

The moisture meter is of indirect type and based on the principle that the electrical conductivity of cotton varies with the amount of moisture present in them. Therefore, moisture present in these materials can be estimated by measuring their electrical resistance. For this purpose, a wheatstone bridge is employed, one arm being the cotton plug of known weight compressed to a constant degree to packing in a special container. The imbalance in the bridge caused by the moisture is then amplified and read on a meter directly.

There is, of course, another way of finding out moisture content in textile materials which is known as direct method or oven dry method. But the indirect method has been given priority due to its simplicity speed of testing and lower manufacturing cost. Investigations have proved that a limited sample weight variation and trash content in sample will not introduce any error in moisture estimation by electronic moisture meter.

The sample chamber incorporates specially designed curved electrodes spaced to scan a larger part of the specimen under test. A sample weight variation of 10 per cent and trash content in sample upto 8 per cent will not introduce any error in moisture estimation.

The operation of the meter is simple. After switching on, the zero of the meter is set by the zero knob. Switching on the calibration position, the meter is set to the calibaration point by adjusting the cal. knob. Approximately 10 g. of material is inserted into the chamber provided and the lever is actuated to give the desired packing. By selecting appropriate range of scale, the value is read from the meter; the corresponding moisture content is read out from the tables provided.

An analysis of the data obtained on a large number of samples showed that the values of moisture content obtained on this instrument and by the direct method (oven dry) agreed very closely, the correlation co-efficient between them being* 0.99. The accuracy is high, as the error based on mean of 5 samples is as low as 0.20 moisture content per cent.

Similar type of instruments are not manufactured indigenously; only oven type of instrument is produced by one firm in the country. At present, entire demand is being met by import. Although future demand has not been assessed, yet it is expected to have fairly good market prospects in textile industry.

Two units of the instrument have been fabricated and tested. Their performance has been quite satisfactory.

All the raw materials are available indigenously. No special type of plant or machinery is required for the manufacture of this unit. Any well-established electronic instruments manufacturing organisation can accommodate the manufacture without additional capital investment.

CHARCOAL GAS PLANT FOR CARS

Reviving the manufacture of charcoal gas producing plant for passenger cars after interval of nearly two and half decades, an automobile ancillary manufacturing unit in Madras (Tamil Nadu) - M/s. T. V. Sundaram have recently made a prototype which can be easily fitted to any car.

Viewed against the background of current fuel crisis throughout the world, the charcoal gas plant is expected to save the fuel problem considerably. M/s. TVS of Madras have already used charcoal gas for operating their large fleet of 150 trucks, buses and taxies during the last war and proved that charcoal gas was a simple, inexpensive and reliable substitute for petrol. The Madras firm has a record of exporting a number of such charcoal gas units to Sri Lanka during that period. However, with the end of war, the manufacture of the units was discontinued.

The firm proposes to manufacture 50 units every month in the initial months but after six months, the number can go upto 100. A demonstration of the prototype has recently been staged.

INDIA'S TRADE WITH ECAFE REGION

India's exports to the countries in the ECAFE region have been increasing gradually from year to year. From the average annual figure of Rs. 1348 million during the second Five Year Plan, exports increased to Rs. 1634 million during the third Five year Plan. During 1971-72, exports stood at Rs. 4245 million and rose further to Rs. 5581 million in 1972-73, a rise of 31.5 per cent in one year against the overall increase of 22 per cent in India's exports during this year. The share of this region in India's total exports during 1972-73 was 28.5 per cent against 26.4 per cent in the previous year.

Countries in the region, more prominent among purchasers of Indian products during 1972-73 were Japan, accounting for 39 per cent of India's exports to this region and 11 per cent of India's exports to all the countries, Bangladesh (28.4 per cent and 8.1 per cent), Nepal (6.3 per cent and 1.8 per cent), Australia (4.7 per cent and 1.3 per cent), Iran (4.4 per cent and 1.3 per cent), Hong Kong (3.6 per cent and 1 per cent), Singapore (3.2 per cent and 0.9 per cent) and Afghanistan (2.2 per cent and 0.7 per cent). The other countries prominent in India's export trade in this region are Sri Lanka, Malaysia, New Zealand, Indonesia, Burma and Thailand.

Some of the important commodities exported to ECAFE region countries are jute goods, iron ore, marine products, leather, hides and skins (tanned or dressed), prearls, precious and semi-precious stones, iron and steel including ferro alloys and ferro manganese, cotton piecegoods—mill made and cotton yarn and thread. Some of the important non-traditional items of exports to these countries are machinery including electrical machinery, scientific apparatus and appliances, transport equipment, chemical and allied products, apparel and petroleum products.

Japan was the third best coustomer (after USSR and USA) for Indian products in 1972-73. Exports stood at Rs. 2172 million against Rs. 1823 million during 1971-72 indicating a rise of 19 per cent. The more important items of export with comparative figures during the two years within brackets were : iron ore (Rs. 917 milion and Rs. 863 million), fish and fish products (Rs. 291 million and Rs. 224 million), oil cakes (Rs. 130 million and Rs. 73 million), raw cotton (Rs. 102 million and Rs. 116 million), non-ferrous ores (Rs. 114 million and Rs. 103 million), leather (Rs. 79 million and Rs. 41 million), precious stones (Rs. 73 million and Rs. 44 million), iron and steel (Rs. 56 million and Rs. 53 million), tobacco (Rs. 44 million and Rs. 39 million).

The next prominent market for Indian products in the region during 1972-73 was Bangladesh which bought goods valued at Rs. 1583 million against Rs. 430 million in the previous year. The main items of exports were wheat, cotton manufactures, medicinal products and oils.

Nepal purchased Indian goods worth Rs. 351 million in 1972-73 and Rs. 284 million in 1971-72. The exports were diversified over a large number of products The main items were cotton fabrics (Rs. 72 million and Rs. 75 million), medicinal products (Rs. 16 million and Rs. 14 million), cement (Rs. 11 million in each year), iron and steel (Rs. 11 million and Rs. 3 million), metal manufactures (Rs. 9 million and Rs. 7 million), machinery of various sorts (Rs. 20 million and Rs. 15 million) and transport equipment (Rs. 14 million and Rs. 6 million).

India's exports to Australia in 1972-73 were valued at Rs. 260 million, a slight decline from Rs. 280 million in the previous year. The important items exported were : jute manufactures (Rs. 75 million against Rs. 114 million), tea (Rs. 21 million in each year), cotton fabrics Rs. 21 million and Rs. 29 million), machinery (Rs. 12 million and Rs. 9 million), clothing (Rs. 14 million and Rs. 5 million), fish (Rs. 15 million and Rs. 11 million) and cashew kernels (Rs. 13 million and Rs. 14 million).

Iran was another important market for Indian products in 1972-73, exports in 1972-73 being at Rs. 248 million against Rs. 198 million only in the earlier year. Jute manufactures earned Rs. 72 million in 1972-73, a four-fold rise over Rs. 18 million in the earlier year. The other commodities of importance were tea (Rs. 37 million and Rs. 42 million), metals and metal manufactures (Rs. 74 million and Rs. 83 million), machinery (Rs. 13 million and Rs. 20 million) and transport equipment (Rs. 18 million and Rs. 10 million).

Exports to Hong Kong during 1972-73 were valued at Rs. 201 million against Rs. 158 million in 1971-72. It is interesting to note that the major item exported to Hong Kong consisted of precious stones which earned Rs. 128 million in 1972-73 against Rs. 96 million in the preceding year. Cashew nuts were exported for a value of Rs. 12 million as compared to Rs. 10 million in 1971-72. The balance of exports were spread over a large number of items.

Pattern of India's exports to Singapore is more or less similar to that with Hong Kong. Exports during 1972-73 were valued at Rs. 178 million against Rs. 176 million in the earlier year. Precious stones earned Rs. 17 million and Rs. 15 millian in 1972-73 and 1971-72 respectively. Cotton fabrics fetched Rs. 18 million and Rs. 16 million respectively in the two years. Iron and steel were exported to the value of Rs. 17 million and Rs. 9 million in the two years. Machinery and transport equipment earned Rs. 24 million and Rs. 26 million respectively in the two years.

In case of Afghanistan, tea valued at Rs. 72 million was exported in 1972-73 accounting for 58 per cent of India's total exports to that country. The comparative figures for the preceeding year were Rs. 75 million–75 per cent of the total exports at Rs. 98 million.

India's exports to Sri Lanka in 1972-73 at Rs. 80 million were very disappointing as compared to Rs. 312 million in the preceding year. Exports of all the major commodities, namely, sugar, vegetables, fish, spices cotton yarn, machinery and transport equipment went down.

Almost similar was the position in case of Burma and Malaysia where exports went down from Rs. 108 million and Rs. 117 million in 1971-72 to Rs. 44 million and Rs. 93 million respectively in 1972-73. Exports of most of the commodities–cotton yarn, jute manufactures, iron and steel in case of Burma and machinery, cotton textiles in respect of Malaysia went down in 1972-73. Exports to New Zealand also decreased from Rs. 103 million in 1971-72 to Rs. 82 million in 1972-73.

Exports to Thailand improved from Rs. 46 million in 1971-72 to Rs. 57 million in 1972-73 mainly through higher exports of iron and steel and machinery. Exports to Indonesia went up from Rs. 32 million in 1971-72 to Rs. 53 million in 1972-73 chiefly because of increased exports of machinery, iron and steel and transport equipment.

India's imports from this region seem to be more or less stable around Rs. 3,000 million, the average for five years ending March 1972. The actual imports in 1971-72 were valued at Rs. 3,614 million and in 1972-73 Rs. 3,889 million. The major sources of India's purchases from this region are Japan (about 44.4 per cent), Iran (32 per cent), Australia (6.8 per cent), Nepal (2.5 per cent), Afghanistan (4.2 per cent), Malaysia (2 per cent) and South Korea (1.8 per cent). The major items of imports are chemicals, fertilisers, iron and steel, machinery of various types from Japan, crude petroleum from Iran, raw wool, lead and zinc from Australia, fruits, fresh and dry from Afghanistan, rice and butter from Nepal, tin from Malaysia and chemicals and fertilisers from South Korea.

The foregoing paragraphs reveal the trends of two-way trade between India and the ECAFE region. Owing to geographical proximity and traditional commercial links, the scope for mutual exchange of goods and services is undoubtedly improving. While the co-developing economies of the region have been importing a broad range of products from India (both manufactured and traditional), the developed countries in the region, namely, Japan and Australia, also hold promise for larger offtake of labour intensive items.

Industrial cooperation through joint ventures is another promising field of trade promotion with the ECAFE region. India has already entered into several joint ventures overseas of which 39 have already gone into production with approved investment of Rs. 75 million and 49 are in various stages of implementation with an approved investment of Rs. 114 million. The largest number of Indian joint ventures in the ECAFE region is in Malaysia and of the 26 proposals in this country, 10 have gone on stream and 16 are at different stages of implementation. So far, 7 proposals have been accorded approval for Indian ventures in Indonesia. In Thailand, a steel mill and a synthetic fibre spinning plant is already in production. Proposals for joint ventures for the manufacture of forest-based products are coming up in Fiji. A diesel engine unit, set up in Philippines is likely to be in production soon. Philippines offers further possibilities for textile units and coconut processing plants. These examples amply reveal the potential for India entering into joint ventures with the member countries of ECAFE.

Economic Commission for Asia and Far East has played a notable role in the formulation of regional cooperation schemes including Mekong project (1957), Asia high-way project (1965), Asia Development Bank (1966) and the Pepper Community (1971). Several other projects under the aegies of ECAFE are taking shape currently, such as, the Trans-Asian Railway Project, Asian Clearing Union and commodity arrangements in respect of rice, rubber and tin and so on.

Trade with the ECAFE region is of paramount importance in the context of India's external trade. As it is, about one-third of Indian exports and nearly one-fourths of her imports are from this region. ☐

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EXPORT SUCCESS OF PUBLIC SECTOR CORPORATIONS

The expanding role assigned to the public sector corporations in India's export trade and the competence with which they have carried out the responsibility would be evident from the foreign exchange earned and fresh business opportunities seized by the major corporations, namely, the State Trading Corporation of India Limited, the Projects and Equipment Corporation of India Limited, the Minerals and Metals Trading Corporation of India Limited, the Handicrafts and Handlooms Export Corporation of India Limited, the Cotton Corporation of India Limited, the Cashew Corporation of India Limited and the Jute Corporation of India Limited.

Starting with a modest export effort of Rs. 58 million in 1956-57, the State Trading Corporation of India Limited (STC), Chandralok, Janpath, New Delhi, has hit the Rs. 1700 million export mark in 1972-73. It has set a target of Rs. 2440 million for 1973-74. The number of items handled by the Corporation rose from 10 in 1956-57 to 140 in 1971-72 (including 13 canalised items). Its exports of non-traditional products increased by about 17 per cent per year in the last four years. During 1972-73, its export of non-traditional items stood at Rs. 530 million as compared to Rs. 310 million in 1968-69. The Corporation's export profile includes almost the entire range of the country's production : agricultural products, chemicals, engineering products, leather goods, consumer goods and industrial products. List of items exported by the STC includes leather footwear, knitted woollen garments, castor oil, jute goods, tobacco, rice, rubber, raw opium, processed foods, cement, leather and leather goods, salt, lemongrass oil, canvas/plastic footwear, coir products, construction material and leather components.

In the year 1972-73, STC exported aluminium foils, fumigator kits, zinc chloride, naphtha, zinc oxide, powerloom fabrics, caustic potash and flakes, nylon pullovers, polyester fabrics, woollen carpets, cigarettes, mats, hospital equipment, talcum powder, coated boards and a host of departmental stores items for the first time.

The Projects and Equipment Corporation of India Limited (PEC), New Delhi, aims at promoting the export of engineering, industrial and railway equipment in the established markets, penetrating new markets for new products and fostering export ventures and turnkey projects in the fields of railways, public utility and industrial plants. This Corporation succeeded in exporting worth Rs. 101 million during 1973 and an estimated Rs. 171 million in 1973-74. Its export success is to be viewed against known constraints at home and abroad, such as, power shortages, shipping difficulties and enormous increases in freight rates. PEC has been continually responding to several world tenders and has undertaken direct negotiations with quite a few prospective buyers. It has helped the image of Indian rolling stock industry in the world markets as a supplier of quality and sophisticated equipment. It exported the equipment to several countries including Iraq, Iran, Sudan, East Africa, Poland, Hungary and Yugoslavia. Apart from railway rolling stock, PEC has handled the export of many other products, such as, petrol dispensing pumps, garage equipment, cutting tools, bridge girders, shock absorbers and ticket printing machines. Some of the major contracts secured by this Corporation during 1973-74 include 30 passenger coaches at a value of Rs. 24.7 million to Philippines, export of 110 wagons at a value of Rs. 16.5 million to Malaysia and supply of textile machinery worth about Rs. 74 million to South Korea. In the context of turnkey projects, PEC has made a notable mark and two major tenders for establishment of textile mills in Iraq and Turkey are stated to hold promising prospects. It has also been actively associated with the feasibility survey of a railway line in Iraq.

The Minerals and Metals Trading Corporation Limited (MMTC), Express Building, Bahadur Shah Zafar Marg, New Delhi, is another example of the success achieved by India's public sector trading agencies. Starting with a trickle of exports, the Corporation has during less than a decade, reached a level of Rs. 1040 million (1972-73). Iron ore is the leading export item handled by MMTC, which exported 12.2 million tonnes during 1973, the highest record for the Corporation. In this year, it has also succeeded in concluding contracts with new markets like Taiwan and South Korea and has made significant breakthrough in the competitive markets of West Europe by taking advantage of the high demand for the ore in the European steel industry. It has also secured a sizeable mark up in the price of the ore supply to Japan, a traditional buyer. In respect of manganese ore, MMTC has been closely following world trends in the ore and secured 25 per cent price increase over the last year's price for its supplies of ferruginous manganese ore of 30/28 grade to Japan. Though in view of the growing internal requirements, export trade of different grades of manganese ore is restricted under ceiling conditions, MMTC has been active in promoting overseas supplies of ferro manganese slag, mica and sillimanite.

The Handicrafts and Handlooms Exports Corporation of India Limited (HHEC), Lok Kalyan Bhavan,

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Din Dayal Upadhaya Marg, New Delhi-1 is yet another example of export success achieved by the public sector Corporations Its export turnover has been picking up year after year. Even in the first three quarters of 1973 (January-September), its turnover amounted to Rs. 116 million as against Rs. 44.30 million in the same period of 1972. A major operation of HHEC's export effort is concentrated at woollen knitwear, the export of which has been canalised through the Corporation. HHEC has built up a sizeable export trade in the knitwear to U.S.A., Japan, U.K. and France.

The Cotton Corporation of India Limited, Air India Building, 12th floor, Nariman Point, Bombay-1, has recently entered into an agreement with Bangladesh Textile Industries Corporation for supply of cotton. It has received firm inquiries from overseas markets including Japan, South Korea, Sri Lanka and Iraq.

The Cashew Corporation of India Limited, New Delhi has been entrusted with the responsibility to ensure steady supplies of imported raw cahsewnuts. The Corporation has made headway in cashew kernel exports during April-December, 1973 at Rs. 640 million as against Rs. 562 million during the same period in 1972.

The Jute Corporation of India, 21, British India Street, Calcutta, which has been set up not only to undertake internal marketing of raw jute but also external trade in the fibre, has been able to supply about 200,000 bales abroad during 1972-73 as against merely 123,000 bales in the preceding year.

The declared policy of the Government of India is to assign increasing role to public sector corporations alike in import and export trade. As it is, nearly three-fourths of the country's import trade is in the hands of these corporations and over a quarter of its export trade too. The specific function of the corportions would be to supplement the export effort of private agencies, promote exports in traditional supplies to traditional markets, identify new areas for export and undertake knowhow exports as also overseas supply in consultancy services. Towards this end, the Corporations have covered a good ground.

TURNKEY ORDER FOR COMPLETE SUGAR PLANT

M/s. Walchandnagar Industries Limited, Construction House, Ballard Estate, Bombay, one of the units engaged in the production of sugar and industrial machinery, have recently secured an assignment from Uganda for fabrication and supply of entire sugar plant machinery for a sugar plant to be set up in that country. It is stated to be the first turnkey order for setting up a complete sugar plant abroad.

The production capacity of the plant is estimated to be of the order of 1,250 tonnes of sugarcane crushing per day. The proposed plant is to be set up at Kinyala in Uganda. M/s. Siemens India Limited, 130, Worli, Bombay-18, another Indian firm, are to supply the complete electrical equipment for the proposed sugar plant which includes switchboards, cables, multi-speed and single-speed centrifuge motors with sophisticated control panels. Earlier during 1972, the Bombay firm secured an order from Malaysia for the supply of sugar mill machinery at a value of Rs. 45 million. The sugar plant in Malaysia had a daily cane crushing capacity of 2,500 tonnes.

With the manufacturing plant situated at Walchandnagar in Poona District of Maharashtra State, the firm's sugar production is based on sulphitation process. Apart from producing sugar and sugar mill machinery, the firm's production profile includes other items, such as, industrial plastic mouldings, industrial alcohol, boilers, pressure vessels and chemical and cement machinery, high speed centrifugal gears, gear boxes and pinions. The firm has active plans to enhance capacity for these items.

India's sugar mill machinery is picking up overseas markets rapidly in recent years. During 1972-73, the industry exported the machinery at a cost of Rs. 12 million. As against the trend in the preceding decade and a half, the export value of the machinery reached an unprecedented level of Rs. 11 million in 1971-72. Surprisingly, the export value reached these levels from only Rs. 0.5 million in 1965-66 and Rs. 1.8 million in 1970-71.

Uganda is the foremost buyer of India-manufactured sugar mill machinery. In 1972-73, it imported worth over Rs. 7 million. Sugarcane crushing machinery which was absorbed mainly by Uganda, Nigeria, Liberia and Ghana, fetched nearly Rs. 1.10 million worth of foreign exchange during the year. A vast export potential also awaits in Indonesia where Indian sugar mill machinery may find ready market because of its high quality and price competitiveness.

India's technical expertise in the line has attained the level of manufacturing complete sugar plants of 1250/2000 tonnes or even higher cane crushing capacity per day. Some of the Indian manufacturers are in a position to produce sugarcane and beet diffusion plants. At present, there are 16 units engaged in the manufacture of sugar mill machinery with combined installed capacity of over Rs. 281 million (1972). The production during 1972 was of the order of Rs. 180 million. In 1971, the installed capacity of Rs. 230 million was spread over 15 units and actual production during the year was valued at Rs. 163.45 million. The industry is rapidly marching towards progressive indigenisation. The present import content in the industry is roughly 10 per cent, consisting mainly of bought-out items, such as, hydraulics, ball and roller bearings and centrifugal screens.

RECENT ORDERS FOR SWITCHGEAR EQUIPMENT

Indian electrical power machinery and switchgear have come to enjoy wide popularity overseas. During 1972-73 these were supplied abroad at a value of Rs. 56.15 million as compared to Rs. 47.50 million in 1971-72. In fact, the exports rose to these levels from only Rs. 19 million in 1968-69.

During the year, complete generating sets with diesel engines, induction motors in various ranges, slipring motors of different types, electric motors and parts, transformers in different ratings and parts, rectifiers and rectifying apparatus, oil circuit breakers of various types, motor starters, switch fuse units, fuse rewireable and of high rupturing capacity, relays, switch boards and control panels, switches of various kinds, switchgear, electric resistance wire, lightning arrestors, automatic voltage regulators, plug socket holders, parts and accessories of switchgear and other power machinery were included in the export range.

Malaysia, Federal Republic of Germany, Sri Lanka, Libya, Iraq, Nepal, Kenya, New Zealand, Uganda, Sudan, Singapore, Nigeria, Kuwait and Hong Kong were the principal importing destinations.

Adding to the export success of the power machinery manufacturing sector of Indian economy, M/s. Tata - Merlin and Gerin Limited, Rajmahal, 84, Veer Nariman Road, Bombay-1, one of the undertakings engaged in the manufacture of power distribution equipment recently secured two sizeable export orders at a value of Rs. 2.8 million from Malaysia and South Korea for the supply of sophisticated switchgear equipment. The Bombay firm received these orders through two Government of India undertakings - M/s. Indian Consortium of Power Projects and M/s. Project and Equipment Corporation of India Limited.

Of these orders, the one secured from Malaysia is of the order of Rs. 1.67 million while the other from South Korea is valued at Rs. 1.12 million. The former is to be completed by March 1975 while the latter is expected to be completed within the period of eight to nine months from now.

The equipment to be supplied to both the countries include 132 KV and 66 KV air blast circuit breakers, 11 KV 250 MVA switchboards, low-tension circuit breakers, 60 KV instrument transformers and control and relay panels. According to the terms of agreement, Indian engineers would supervise the erection, testing and commissioning of the equipment in both the countries.

The manufacturing range of the firm covers a number of sophisticated power distribution equipment, such as, low tension circuit breakers, air break contractors, 11 KV clad truck type circuit breakers, air blast circuit breakers upto 132 KV, switchboards and control panels, out-door isolators, current and potential transformers. The firm manufactures these items in technical collaboration with M/s. Merlin and Gerin S. A. Grenoble of France, a reputable firm in the line. The Bombay firm's manufacturing plant is located at Thana.

In the organised sector, the total production of switchgear and control gear was estimated at Rs. 497.80 million in 1972 as compared to Rs. 422.32 million in 1971. The number of units engaged in the production in the respective years was 50 and 48. In the same year (1972), 11 units with combined installed capacity of 378,000 numbers were engaged in the production of motor starters. Their production during the year was estimated at 432,000 numbers as against 383,000 numbers in 1971. In the manufacture of electric motors (1 H. P. and above), an installed capacity of 5.45 million H. P. was spread over 33 units in the line and their production during the year was estimated at over 3 million H. P., valued at Rs. 380 million while in 1971 it was of the order of 2.6 million H.P. at a cost of Rs. 344.50 million. In the area of power distribution transformers, 27 units with an installed capacity of 14.46 million KVA were engaged during 1972 and their production was estimated at 11.31 million KVA valued at Rs. 513 million. In the preceding year (1971) the value of production was Rs. 516.10 million.

EXPORT TRADE IN NYLON FABRICS

India's exports of fabrics woven of synthetic fibres amounted to Rs. 39.40 million (1972-73) as compared to Rs. 28 million in the preceding year. The export value of these fabrics in 1973-74 is expected to be still higher as even during the first six months of the year (April-September 1974), such exports earned more than Rs. 25 million in foreign exchange.

During the period April-September 1973, nylon sarees were supplied mainly to Singapore, UK, Fiji Islands and Mauritius to fetch about Rs. 2.20 million. Nylon brasso which earned Rs. 1.46 million in foreign exchange was popular primarily in Bahrein Islands, Saudi Arabia, Indonesia, Singapore and Kuwait while over Rs. 2.30 million was earned through the export of nylon georgette to Singapore, Mauritius, Fiji Islands, Saudi Arabia and Kuwait among other countries. Nylon satin was supplied abroad to the tune of Rs. 1.10 million; Poland, Singapore and Dubai were the major markets. Polyester suiting and shirting and other polyster fabrics netted Rs. 11.10 million. Zambia was the leading market for polyester suiting, followed by Bahrein Islands and UK.

M/s. Shiv Embroidery Mfg. Co., 7, New Marine Lines, Bombay, manufacturers of nylon georgette and crimped shamoo satin embroidered, have been able to step up their exports from Rs. 1.5 million in 1972-73 to Rs. 5.5 million during first eleven months of 1973-74. The export earning of the firm for the full year of 1973-74 is thus expected to reach a level of Rs. 6 million. Though set up about a decade back, the firm entered the export field in 1969-70 with a nominal earning of merely Rs. 0.2 million. Despite stiff competition from Japan, the firm's exports have, to-day, found their way to a number of countries including UK, Australia, Ethopia, Malaysia, Mauritius, Fiji Islands, Singapore, Zambia, Kenya, Qatar, Dubai, Muscat, South Yemen and Sudan.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT PERFORMANCE OF ENGINEERING PRODUCTS

India's export trade in enginering goods amounted to Rs. 1301.40 million in the first eleven months of 1973-74 (April '73—January '74) as compared to Rs. 1068.50 million in the same period of 1972-73. In the entire year of 1972-73, the export value was of the order of Rs. 1505 million while in 1971-72 it was Rs. 1260.44 million, in 1970-71 Rs. 1165 million and in 1969-70 Rs. 1063.60 million.

The major categories of exports in India's engineering field are auto and auto parts, industrial plant and machinery, electric wires and cables, railway wagons and coaches, MS pipes and tubes, bicycles and parts, steel structurals, hand and small tools, electric motors and transformers, electronice quipment, castings and forgings, machine tools and diesel engines.

Among the major Asian importers of Indian engineering goods are Iran, Iraq, Sri Lanka, Formosa, Singapore, Malaysia, Thailand, Kuwait, Burma, Bangladesh, Muscat, Yemen, Qatar and Saudi Arabia. In the African region, the principal importers are Sudan, Arab Republic of Egypt, Nigeria, Kenya, Uganda and Tanzania. The U. K., the Federal Republic of Germany and the Netherlands are primary customers in West Europe. In the East-European region, the importers in order of importance are U.S.S.R., Yugoslavia, Czechoslovakia and German Democratic Republic. Besides, the U.S.A. and New Zealand are also among the major countries that are importing engineering goods from India.

An important feature of India's engineering product exports pertains to the diversification being made in the range of products supplied overseas as also the offtake by sophisticated markets. Indian exporters have been successfully competiting in the world markets for securing global tenders. Under such tenders, the Indian industry is effecting increasing supplies to markets in South East Asia, Africa, East Europe as also to U.S.A. and the Federal Republic of Germany. These high value contracts mainly covered supplies of power cables, transmission line towers, railway wagons, rail and rail accessories, HR boilers and textile machinery. Also the engineering industry in India has succeeded in securing turnkey projects for items like cement plants, water pumping plants and power stations. In addition, India is increasingly participating in joint ventures in the developing countries where plants, machinery and equipment, technical know-how and equity participation under the ventures are also supplied by the Indian Industry.

The Engineering Export Promotion Council is hopeful of achieving a target of Rs. 1700 million for the year 1973-74. The target for 1974-75 has been fixed at Rs. 2440 million. The growth rate in the engineering export trade would have been higher over the years but for certain limitations, such as, the shortage of iron and steel and cut in power supplies to engineering factories, difficulties in securing shipping space, as also the increases in shipping freight rates. The Government of India have taken quite a few measures for promoting the engineering exports among which mention may be made of the following : imported raw material is being provided to registered exporters in adequate quantities; indigenous raw materials like steel and aluminium is being supplied on priority basis to the units engaged in the export production; bulk imports of certain raw materials are being organised by public sector agencies for export fabrication and compensatory support is being allowed on exports of selected products to develop marketing competence and to neutralise the disadvantages inherent in the present stage of the country's development. It is hoped that the years to come will witness a sustained, if not improved growth rate.

EXPORT POSITION OF LEATHER AND LEATHER MANUFACTURES

Although leather has been an important traditional item in India's export trade, the bulk of the export was accounted for by semi-processed hides and skins. The Government of India's declared policy has been to shift the emphasis from the export of semi-processed hides and skins to finished leather and leather manufactures. The exports in the line have no doubt gone up steadily year after year, but the share of semi-processed hides and skins still constitutes over 80 per cent of the total export value. It is to stimulate the shift-over of the export pattern that the Government appointed a high-powered committee which recommended measures, such as, the imposition of quotas for export of semi-processed hides and skins and development of industrial infra-structure. The Ministry of Commerce has taken steps to bring about the desired change in the export pattern. The export trade of raw hides and skins have been completely banned; exports of semi-processed hides and skins have been canalised through the State Trading Corporation effective from December 1972; exports of footwear have also been canalised through STC; export duty of 20 per cent has been imposed on semi-processed hides and skins and exports of semi-processed hides and skins have been regulated through a quota system.

The actual position of exports of leather and leather manufactures was as follows : Out of Rs. 1835 million worth of total exports of leather and leather manufactures (1972-73), the contribution of E.I. tanned hides and skins was as much as Rs. 1004.4 million while that of chrome tanned was Rs. 520.3 million. Finished leather and leather goods secured Rs. 310.4 million of which footwear and components fetched Rs. 102.6 million, finished leather Rs. 171.8 million and industrial leather manufactures and leather goods Rs. 36 million. In the first three quarters of 1973-74 (April-December 1973), the export value was of the order of Rs. 1434 million as against Rs. 1213 million in the same period of 1972-73.

OIL SEEDS, NUTS AND KERNELS FETCH MORE FOREIGN EXCHANGE

Improving their overseas offtake sharply to Rs. 59 million during the first half of 1973-74 (April-September 1973) from Rs. 29 75 million (April-September 1972), India's export trade in oilseeds, oil nuts and oil kernels registered nearly two-fold increase. Taking into consideration the export level during the preceding two years (1972-73 and 1971-72) which was more or less around Rs. 69 million in each of these years, the current export performance augurs well, particularly from the view point of breaking new grounds in the field.

During April-September 1973, groundnut kernels constituted the principal item of export, having earned foreign exchange worth Rs. 48.40 million. In terms of quantity, 18,600 tonnes were supplied overseas. USSR, the biggest buyer imported 7,108 tonnes at Rs. 20.91 million, followed by Czechoslovakia 3,235 tonnes at Rs. 7.90 million, Yugoslavia 1,612 tonnes at Rs. 4.82 million, Bulgaria 1,608 tonnes at Rs. 3.63 million and Rumania 1,286 tonnes at Rs. 2.76 million.

Mustard seed, the second best item active in the exports, brought in Rs. 7.35 million (4,115 tonnes). Bangladesh was the principal importing destination which alone bought worth Rs. 7.22 million (4,070 tonnes), absorbing the bulk of supplies.

Shelled groundnut, which earned Rs. 5.15 million (2,881 tonnes), were imported by about 9 countries amongst which Czechoslovakia, USSR, Poland and Rumania are significant.

Sawa seed (Rs. 2.87 million), poppy seed (Rs. 1.10 million), ajwan, sunflower seed, seasum til jingli, niger seeds and other essential seeds were also exported during the period to USA, Saudi Arabia, UK, Japan, Federal Republic of Germany, Singapore, Nepal, Czechoslovakia, Belgium and Tunisia.

PLASTICS AND LINOLEUMS EXPORTS IMPROVE

India's exports of plastics and linoleums improved appreciably to Rs. 72.32 million during the first three quarters of 1973-74 (April-December 1973) from Rs. 54.66 million during the corresponding period of the preceding year (1972-73). The revised export target for the full year of 1973-74 is placed at Rs. 90 million by the Plastics and Linoleums Export Promotion Council, Bombay.

In the plastics group, a number of items recorded sizeable improvement during the reviewed period of 1973-74. The export trade in fountain pens, ball pens and ball point pens, for instance, nearly trebled to over Rs. 5.80 million from Rs. 2 million in the comparable period (April-December) of 1972-73. Almost a similar rise was registered in respect of plastic imitation jewellery which earned Rs. 9.80 million against Rs. 3.95 million. Likewise, metallised plastic products improved their off-take three fold to over Rs. 1.20 million from a little over Rs. 0.33 million in 1972-73 (April-December 1972). Spectacle frames which constitute a sizeable category of export earning in the plastics group also fetched much more at Rs. 8 million in comparison to Rs. 5.90 million. Another area of appreciable export growth related to polyethylene film sheets and bags (including woven sacks) which earned as much as Rs. 7 million against Rs. 3.20 million. Exports of plastic electrical accessories also looked up at Rs. 3.40 million from Rs. 2.75 million. Among other items which witnessed rise in their export value were GRP manufactures (Rs. 1.30 million against Rs. 1 million) and PVC flexible/rigid pipes and conduits (Rs. 1.80 million against Rs. 0.50 million). The combined export earning of plastic moulded and extruded goods, as well as, gramophone records and accessories was almost constant-Rs. 14.72 million and Rs. 14 million respectively in the two periods. Interestingly, plastic sequins and PVC which did not figure at all in the export list in the period of review in 1972-73, made some headway during the following year. However, there could not be any export of PVC foam products, PVC coated jute and elastic baggage holder grips in either of the two periods.

Notwithstanding the general export improvement, a few items in the plastics group registered a shortfall in their export performance in the first three quarters of 1973-74 as compared to the corresponding period in the preceding year. Foreign exchange earning of PVC leather cloth was reduced to Rs. 1.90 million from Rs. 3.20 million. There was also marginal decline in the export of plastic bangles (Rs. 3.37 million against Rs. 3.56 million), hand bags and other PVC fabricated goods (Rs. 0.60 million against Rs. 0.94 million), vacuum formed products (Rs. 768 against Rs. 17,158), foam leather cloth and sheeting (Rs. 0.56 million against Rs. 0.70 million), PVC sheets (Rs. 1.35 million against Rs. 1.76 million), plastic brushes (Rs. 0.10 million against Rs. 0.12 million), polyurethane foam and its products (Rs. 0.07 million against Rs. 0.09 million) and nitro cellulose cloth (Rs. 0.05 million against Rs. 0.06 million).

In the linoleums group, felt based and jute based linoleums earned less at Rs. 4.30 million in the period under review of 1973-74 as compared to the corresponding period of 1972-73. Poly-lined jute export also suffered a set-back at Rs. 2.80 million against Rs. 3.20 million. The sharp rise in export of PVC compound, however, more than made up the loss in export performance of other items. The earning of this compound rose sharply to nearly Rs. 3 million from a negligible foreign exchange earning of Rs. 5,200 in the comparable period of 1972-73.

BOOST IN WOOD EXPORTS

Outstripping the export value of the entire preceding year (1972-73) at Rs. 95 million, India's exports of wood, lumber and cork earned as much foreign exchange as Rs. 106.30 million even during the first two quarters of 1973-74 (April-September 1973). These exports registered more than 100 per cent increase over the export value at Rs. 48.25 million in the corresponding period of 1972-73.

In the period under review, wood in rough or roughly squared form constituted the largest single category of export dynamism. It earned as much as Rs. 105 million accounting for the lion's share in the overall export earnings.

In this category, rosewood was the most popular variety overseas, which alone earned Rs. 96.83 million. In terms of quantum, 18,862 cubic metres were supplied abroad. Japan was the leading importing destination which absorbed 13,810 cubic metres at a cost of Rs. 77.58 million. Italy, the next important buyer, imported 2,950 cubic metres at a value of Rs. 11.75 million, followed by Federal Republic of Germany (907 cubic metres) at Rs. 2.86 million, USA (215 cubic metres) at Rs. 1.70 million and Singapore (190 cubic metres) at Rs. 1.52 million.

Besides this main variety, the export earnings of other varieties in the category during the period were: sandal wood Rs. 2.58 million (Singapore and Sudan as main buyers); red sanders Rs. 1.86 million (Japan) and sal Rs. 1.26 million (Bangladesh). Teak wood, walnut wood, paliwood, laurel, benteak, teakwood, deodar and other hardwood were the other varieties of wood exported.

Apart from the category mentioned above, shaped or simply worked wood (Rs. 1.25 million against Rs. 200,000) and fuelwood and charcoal (Rs. 7000 against Rs. 25,000) constituted two other categories supplied abroad during April-September 1973.

During 1972-73, the export composition was : rosewood Rs. 82 million (27,000 cubic metres); sandalwood Rs. 5.15 million; red sanders Rs. 1.65 million; walnut wood Rs. 1.30 million; teakwood Rs. 0.38 million and other hardwood Rs. 0.50 million.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PRODUCTION TREND IN COSMETICS

The soap and detergent industry in India is expanding rapidly in recent years because of growing domestic consumption as also increased overseas demand.

The production profile of the industry today covers a number of diverse products, such as, soaps, glycerine, metallic stearates, fatty acid, synthetic detergents, textile auxiliaries, resin finishes, tooth powder, tooth paste, talcum powder, face powder, face cream etc. The output of these products is registering improvement from year to year.

A sharp rise was recorded in the production of soaps, synthetic detergents, tooth paste, resin finishes and metallic stearates in 1972 as compared to 1971, although the production level in respect of fatty acids, textil eauxiliaries, and certain cosmetics was maintained. For instance, during 1972, production of soaps improved to over 0.29 million tonnes from 0.27 million tonnes in 1971. Synthetic detergents output rose sharply to 62,000 tonnes from 50,000 tonnes while that of metallic stearates more than doubled to 453 tonnes from only 208 tonnes. Fatty acid output also moderately improved to 21,900 tonnes from 20,270 tonnes and glycerine production improved marginally from 9,606 tonnes to 9,700 tonnes. Among other items, textile auxiliaries looked up to 23,185 tonnes from 22,625 tonnes, resin finishes to 10,900 tonnes from 8,564 tonnes, tooth powder to 857 tonnes from 815 tonnes, tooth paste to 6,067 tonnes from 5,033 tonnes, talcum powder to 3,897 tonnes from 3,543 tonnes, face powder to 54 tonnes from 53 tonnes and face cream to 946 tonnes from 848 tonnes.

The Government reserved laundry soap production for small scale sector while considerable scope for expansion in capacity exists in the organised sector for toilet soaps in selective cases. Already a scheme in the public sector has been approved for manufacture of toilet soaps. The scheme is under implementation. At present, there are 44 units engaged in the production of soaps having an installed capacity of 217,822 tonnes per annum. Attempts are constantly being made to reduce use of imported tallow in soap manufacture. The units in the organised sector are making use of non-traditional, minor and non-edible oils, such as, rice bran oils in growing quantum in soap manufacture.

For the production of synthetic detergents, 7 units have already been approved by the Government. Six more have been issued letters of intent for a total capacity of 60,000 tonnes per annum. The units are to be located at the rate of one each in the States of Rajasthan, Madhya Pradesh, Andhra Pradesh, Haryana and two in Uttar Pradesh. With a view to encourage production of synthetic detergents liberal import of alkyl benzene, the only raw material required to be procured from abroad, is allowed. Currently there are 5 units engaged in the manufacture of synthetic detergents. The industry is included in the list of selected 65 industries. Complete utilisation of installed capacity is permitted in this line of manufacture.

In the field of toilet items, tooth paste is reserved for development in small scale sector. In the production of talcum powder, face powder, face cream, tooth powder and tooth paste, a major portion of the raw materials required is available indigenously. This has helped in increasing the production from year to year. A unit in small scale sector has been licensed to manufacture baby cream, lotion, shampoo, powder, freshners, cosmetic cream and soaps under the provisions of automatic registration.

India's exports of essential oils, perfume materials, toilet, polishing and cleansing preparations crossed the Rs. 100 million mark during 1972-73 as against Rs. 87 million in 1971-72.

During the first two quarters of 1973-74 (April-September 1973), the exports totalled Rs. 49 million.

JUTE INDUSTRY

A REVIEW

India's jute industry is the largest in the world and constitutes the prime foreign exchange earner for the country. The exports of jute goods from the country amounted to Rs. 2491 million (578,000 tonnes) in 1972-73 as compared to Rs. 2647 million (670,000 tonnes) in 1971-72 and Rs. 1900 million (559,000 tonnes) in 1970-71.

The resurgence of Bangladesh jute industry and the keen competition from synthetics in the world markets have been the two major factors limiting the growth of India's jute product exports. To increase the competitive capacity of jute products in relation to synthetics, the Government of India have recently reduced the export duty on carpet backing and hessian and abolished the duty on sacking. This step has had a salutary effect and the exports during January-October 1973 at 465,000 tonnes showed improvement over that of the same period of 1972.

The production of jute goods in India was estimated at 1.16 million tonnes (1973). The urgent need for the industry to modernise itself so as to improve the quantum of production, reduce the cost of production as also to increase its competitiveness, especially in view of the worldwide energy crisis and the anticipated shortfall in the production of synthetic raw materials, is being given serious consideration by the Indian jute industry and Government. The jute industry in the country has already modernised itself in a substantial way in regard to the drawing and spinning frames. Most of the machinery required for the jute mills are adequately manufactured in the country. The Government of India encourages the jute mills to modernise by way of providing soft loans through Industrial Finance Corporation and voluntary schemes for maintaining floor prices of carpet backing.

The Government of India have also been anxious to step up research and development in the jute industry with a view to reduce production cost and diversify the end-uses of jute manufactures. Towards this purpose there is a proposal to impose a cess on jute manufactures for generating additional funds to conduct the research and product development.

The bulk of production of jute and mesta in India is concentrated in the eastern states of West Bengal, Assam, Bihar and Orissa and the manufacturing industry is concentrated in West Bengal. The raw jute crop during 1973-74 season is said to be a bumper one, estimated around 7.5 to 8 million bales. The minimum support price for raw jute is fixed by the Government of India every year so as to ensure fair and remunerative return to the growers for their produce.

To conduct price support operations and commercial purchase operations and to assure a remunerative price to the grower and eliminate the middleman from the raw jute trade, the Government of India has established the Jute Corporation of India in 1971. The surplus bumper jute crop in the current season is proposed to be siphoned off by the Corporation so that price stability could be achieved. It is the ultimate object of the Government to entrust the entire raw jute trade to the Jute Corporation by stages.

The Government of India have accepted the creation of the Jute International, an international body to ensure multi-lateral cooperation and safeguard the interest of jute in the world markets. This body is expected to play an important role in research and development as also evolving strategy for promotion of the jute industry.

IMPORT POLICY FOR 1974-75

India's import policy for the year 1974-75, which has been recently announced by the Ministry of Commerce, is essentially framed in the context of a severe strain on foreign exchange resources and the pressing need to raise the country's exports to the maximum extent. The policy, however, accords overriding preference to provide imported inputs so as to strengthen the economy's base for export production as also for those industries that are basic to the national economy.

Some of the significant features of the new import policy relate to special facilities for exporters and for small scale industries, continuance of the scheme of compulsory export obligation, a revised scheme for supply of indigenous raw materials to exporters and a dominant role for public sector agencies in import trade.

A significant facility which Indian exporters would receive under the new policy is an additional allocation for import of raw materials and components in the case of certain export products; exporters will be entitled to additional replenishment rates than what they have been receiving. To help manufacturer-exporters to arrange for the import of their requirements in time and plan their exports, a simple system of "Repeat Operation" licence has also been introduced. In other words, manufacturer-exporters who have obtained import replenishment licences on their exports during 1973-74 would be allowed to make further imports on such licences on repeat basis. Special facilities have been provided for small units set up in backward areas or those set up by engineering graduates or ex-service personnel.

Priority industries will continue to be eligible for import of raw materials and components on the basis of their actual consumption in the preceding year but in the first instance their applications will be entertained subject to the importance of the user industry to the national economy as also the needs of export production. The minimum export performance necessary for non-priority industries to claim priority treatment has been raised from 10 to 20 per cent.

The scheme for the grant of import facilities to export houses has been rationalised to make it more export-oriented. Minimum export performance will not be the only requirement for the grant of certificate to these houses but there would be other considerations attached, such as, the house's managerial capacity, professional expertise, market survey conducted by them and publicity of Indian goods undertaken abroad.

The policy for the import of spare parts required for the maintenance of machinery has also been liberalised. All industrial units would be eligible to apply for import of spares even though they do not require imported raw materials.

A scheme to absorb conversion deals has also been introduced under which raw materials would be allowed to be imported for re-export after processing. Indian firms and organisations undertaking project exports would be given necessary facilities.

Public sector agencies are to continue to have an expanding role in the import trade. Ten more items have been included in the list of canalised imports, such as, aluminium (EC grade), glycerine, propylene glycol, dihydrochloride, ethyl alcohol, phosphorous, tin-free steel, M.S. sections and ship building quality sections. This brings out the total number of commodities canalised for imports to 210.

A number of items for which indigenous capacity has been developed will not be normally allowed for import. However, certain items like specified colour dyestuffs, E.C. grade aluminium, specified chemicals, polishing compounds for lense manufacture, ceramic rods, certain natural essential oils and special alloys which were not allowed for import earlier would now be allowed.

Thus, the new import policy is mainly export-oriented. It will be reviewed after six months and imports will be permitted thereafter subject to the availability of foreign exchange.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

UNDER-REAMED PILE FOUNDATIONS FOR EXPANSIVE SOILS

Vast deposits of black cotton soils occur in the whole of Deccan Plateau—Madhya Pradesh, Gujarat, Maharashtra and parts of Andhra Pradesh and Karnataka states. The thickness of the strata varies from a very shallow depth upto a depth exceeding 8 metres. There are evidences of severe cracking of buildings founded on the soil due to its alternate shrinkage and swelling with seasonal variation of moisture content. Conventional footings are inadequate to check these cracks in buildings.

As a solution to this problem, the Central Building Research Institute (CBRI), Roorkee, has introduced the use of under-reamed piles for foundation of buildings on expansive soils. These under-reamed piles are short bored concrete piles with a bulb at the base and sometimes one or more bulbs along the shaft also. Accordingly, these are named as single under-reamed or multi-under-reamed piles. The piles are anchored to a stable zone which has been found to be 3.5 m. deep where the seasonal variation of moisture is negligible. These piles have been found not only to provide a fool-proof solution for foundations in black cotton soil but also to effect considerable economy in cost when compared to conventional foundations. These under-reamed piles have been found economical for construction of foundation of buildings on many non-expansive soils also. The bearing capacity of under-reamed piles for any type of soil is increased by 50 per cent by providing an additional bulb. This led to the development of multi-under-reamed piles which can be used as foundations for multi-storeyed buildings and for other structures carrying heavy loads. Due to their enlarged bases, these piles can carry large uplift forces and lateral thrusts which may occur in high-rise buildings.

Construction of under-reamed piles is very simple requiring simple tools and equipment which have been designed and developed by CBRI. These are readily available in the market. Moreover, highly skilled workers are not required for the purpose.

A number of buildings and other structures including office blocks and residential buildings, industrial buildings and school buildings have been put up all over the country using under-reamed piles as foundation.

CBRI has also furnished designs to various construction agencies for this purpose. Recently under-reamed piles have been used for resisting uplift forces in a dry dock at Calcutta, effecting a net saving of Rs. 3.75 million over the traditional deeper piles and raft.

Economy achieved in construction of foundations by various agencies ranges from 20 to 60 per cent. Its use has already saved the country a sum of over Rs. 60 million.

Under-reamed piles have been included in the National Building Code of India, Indian Standard Code of Practices and the specifications of CPWD, MES, Railways, State P.W.Ds. and Housing Boards. The know-how of the technique has been exported to Ethiopia and great interest in it has been shown by a number of African and Asian countries as well.

MANUFACTURING PROCESS FOR PHTHALATE PLASTICIZERS

National Chemical Laboratory (NCL), Poona, has successfully developed processes for the manufacture of two important phthalate plasticizers, namely, dibutyl phthalate (DBP) and dioctyl phthalate (DOP) which principally find application in vinyl resins. These plasticizers are also used in other synthetic resins, elastomers and organic coatings.

A few firms are already producing DOP/DBP in the country. M/s. Alta Laboratories are producing DOP according to the NCL know-how and M/s. India Carbon Ltd.. Bombay, are also setting up a DOP plant based on the NCL know-how. Owing to rapid growth of plastics industry in the country, there is good scope for setting up new units for the manufacture of these plasticizers,

NCL process consists of esterification of phthallic anhydride with butylalcohol/2-ethyl hexanol in presence of suitable catalyst to obtain DBP/DOP. NCL has developed the processess on pilot plant scale for the manufacture of DBP (50 kgs. per batch) and DOP (70 kgs. per batch). Both the products have been tested and found suitable, conforming to the required specifications.

Main raw materials required for the manufacture of DBP are phthalic anhydride, n-butanol and ancillary chemicals including catalysts. Phthalic anhyride, 2-ethyl hexanol and ancillary chemicals including catalysts are the main raw materials required for the manufacture of DOP. All the raw materials required for the manufacture of both of these plasticizers are available indigenously.

INDIA'S TRADE RELATIONS WITH EEC

India's export trade with the enlarged European Economic Community amounted to Rs. 4077 million while her imports were Rs. 5457 million during 1972-73. The balance of trade between the two regions was thus sizeably against India (Rs. 1380 million).

Indian exports to and imports from Belgium during 1972-73 were Rs. 301 million and Rs. 492 million respectively. To France her exports were valued at Rs. 459 million and imports Rs. 369 million in the year. While the import bill from the Federal Republic of Germany was as much as Rs. 1607 million, India's exports to that country were only Rs. 623 million. The imports from Italy were Rs. 356 million while the exports were valued at Rs. 489 million. India's imports from Netherlands were Rs. 351 million while her exports were Rs. 354 million. The major direction of India's exports was, however, U. K , which absorbed Rs. 1725 million worth of Indian goods during 1972-73 and supplied to India goods worth Rs. 2255 million, The two-way trade position between India on the one hand and Luxembourg, Denmark and Irish Republic on the other was not sizeable enough in the year.

The major products of Indian import from the Common Market (excluding U. K.) are base metals, machinery (non-electric), electrical machinery and apparatus, transport equipment, chemical elements and compounds, medicinal and pharmaceutical products, manufactured fertiliser, paper, metal manufactures, dyeing, tanning and colouring materials and instruments. India's major import items from U. K. have been machinery and transport equipment, iron and steel, non-ferrous metals, particularly copper and lead, metal manufactures, chemical elements and compounds, textile fibres and pharmaceuticals.

Major commodities of export interest from India to EEC (excluding U. K.) are leather products, precious and semi-precious stones, woollen carpets, cotton piecegoods, coir yarn, jute manufactures, crude opium, gums and resins including lac, iron ore and concentrates, raw wool, unmanufactured tobacco, mica, tea, coffee, cashew and pepper. Principal categories of export to the U. K. are tea, unmanufactured tobacco, crude animal and vegetable materials, leather, cotton piecegoods, jute manufactures, textile fibre, cashew, oil cakes, flour coverings, textile yarn and thread, towels, footwear, machinery, transport equipment and instruments.

India's trade prospects with EEC are to be viewed from two major angles, namely, the residual problems with the original membership of the Community and problems arising out of its enlargement from January 1, 1973. Indian economy has secured certain trading concessions from the Community prior to its enlargement. The concessions secured included complete tariff suspension for bulk tea, East India's kips and spices like pepper. The Community also established duty-free quotas (1968) for the import of handloom, cotton fabrics, silk fabrics and certain handicraft products. India also secured sizeable quotas for the export of cotton textiles under bi-lateral arrangement (1969). The Community introduced the Generalised Scheme of

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Preferences (GSP) effective from July 1971 involving complete tariff suspension on many manufactures and semi-manufactures.

Following the enlargement of the Community, intensive negotiations were held on the question of safeguard measures in those areas of India's trade which would be affected adversely by the enlargement. These negotiations resulted in the signing of an agreement in regard to jute and coir. The jute agreement envisaged substantial reduction (60 per cent) in the common customs tariff for this item, while the coir arrangement provides for the reduction of common customs tariff on coir goods by 60 per cent in specified stages.

Notwithstanding the liberalised measures that India secured from EEC, a number of important areas still remain where trade barriers stand in the way of smooth export promotion to the Community. In regard to the jute and coir products, for instance, quota restrictions still persist. EEC's GSP scheme also requires improvements; several products of export interest to India, such as, cashew nuts, walnut, cashewshell oil, certain fruits and vegetables, granite, steatite have remained outside the GSP offer. Also in regard to products like un-manufactured tobacco, prawns and shrimps, the tariff suspension under EEC's GSP is not complete. The quota ceilings on those industrial products that were included under the GSP and sub-division of these quotas among the Member States of the Community have also been proving deterrent.

The Commercial Cooperation Agreement signed by India and EEC (December 1973) was, however, a mile stone in the trading relations between the two regions. The Agreement aims at the promotion of commercial exchanges on the basis of comparative advantage and mutual benefit so as to contribute to their economic and social progress. The agreement also provides for the establishment of a Joint Commission to not only deal with the question of tariff and non-tariff barriers but also to examine the progressive adaptation of the mutual trade patterns and marketing structures.

Happily, India's trade with E.E.C. countries has been showing an upward trend. To sustain the trend, a Commercial Development Programme is being put through by the Indian Government on a bi-lateral basis with EEC countries. The programme has been envisaged to expand and diversify the two way trade. This integrated project will include a series of steps commencing from market survey to creation or expansion of production base and trade promotional measures. On the implementation of the Common Development Programme, the Government of India had already exchanged the Letters of Agreement with the Federal Republic of Germany while an understanding has been reached with Italy to implement the programme and the first phase of the programme has already been started in respect of Belgium. Similarly, a market study survey has been conducted in processed foods and vegetables in Denmark. In France, surveys have been already conducted in bicycles and parts as well as electronic devices.

Also India has Joint Commissions establisehd with Belgium, Netherlands, Italy, France and Federal Republic of Germany. The Commissions have been periodically considering prospects for promoting and diversifying trade and industrial cooperation.

Besides recognising the need to provide better access to the products of developing countries like India in their markets, EEC economies and other developed countries, have come to recognise the basic fact that it would be economical if they vacate certain labour intensive areas of production and import from India on the fundamental principle of comparative cost advantage and international division of labour. This realisation has enabled the Indian exporter to introduce several semi-manufactured and manufactured products in the sophisticated and quality conscious EEC markets. That these countries are now depending on Indian supplies of several manufactured items in addition to traditional products is an ample testimony to the quality and competitiveness of the products exported by the Indian industry. ☐

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INDIAN PLASTIC MACHINERY TO IRAN

India, once a net importer of a wide variety of industrial machinery has now emerged as a competent supplier of a comprehensive range of sophisticated machinery to world markets. The export range broadly covers textile machinery, agricultural machinery construction and mining machinery, food processing machinery, leather machinery, pulp and paper machinery, cement machinery, metal working machinery, mineral crushing and sorting machinery, office machinery and power generating machinery. Plastic machinery has now entered the export field.

A small scale industrial machinery manufacturing unit in Maharashtra, M/s. Kolsite Industries, Andheri, Bombay, have recently bagged an order for the supply of plastic machinery to Iran at a value of Rs. 1.5 million. Besides the supply of plant, the assignment also includes its erection and commissioning for the manufacture of poly-propylene woven sacks, polyethylene liner and box strapping. It is expected that the shipment, installations and trial operations of the proposed plants would be completed by the middle of 1974.

The order is expected to be followed by repeat orders from Iran which is embarking upon a plan for setting up about a dozen plants for producing 10 million woven sacks from plastic chemicals. The Indian firm received enquiries from a number of other countries also which include Arab Republic of Egypt, Syria, Iraq, Ethiopia and Afghanistan. It is hopeful of finalising soon a contract for plastic machinery with Arab Republic of Egypt.

The firm has a capacity to produce 24 plastic plants every year. India's plastic plants manufacturing sector awaits sizeable export potential in Gulf countries because of qualitative standards and price competitiveness of the machinery.

WIRES AND CABLES ON EXPORT STREAM

From Rs. 112.50 million in 1971-72, India's exports of cables and wires improved to Rs. 126 million in the following year. USSR, Iran, Sri Lanka, Federal Republic of Germany, Qatar, Arab Republic of Egypt, Sudan, Tanzania, Kuwait, Thailand, Singapore and Hong Kong are prominent among the buyers abroad. Indian cables industry has already established its reputation in seizing world markets even by bagging international tenders in the face of stiff competition from developed countries, such as, Japan and Italy.

M/s. Asian Cables Corporation Limited, 'Nirmal', Backbay Reclamation, Nariman Point, Bombay-1, engaged in the manufacture and exports of cables and wires of all types secured export orders at a value of Rs. 7.8 million in 1973. They have, in fact, improved their exports during the year by more than 62 per cent over their exports in the preceding year at Rs. 4.8 million.

The firm's production range includes cables and wires of copper and aluminium including rubber insulated and paper insulated and wires for low and high voltage power cables, mining cables, enamelled and super enamelled wires, telephone cables, aluminium cables and steel reinforced.

Included in the priority sector, India's cables and wires industry turns out a variety of products which cater to varying industrial uses. In the organised sector, the industry's production of various types of wires and cables during 1973 was : AAC / ACSR conductors 58,000 tonnes; PILC and PVC Power cables 15,000 kilometres; PVC/VIR cables 620 MCM; dry core cables 3,000 kilometres; coaxial cables 800 kilometres; aluminium wire rods 51,000 tonnes and bare copper conductors 1,000 tonnes.

The installed capacity and number of units in the manufacture of these varieties of cables and wires during the year were : ACC/ACSR conductors 106,850 tonnes and 40 units; PILC and PVC power cables 21,309 kilometres and 11 units; PVC/VIR cables 1213 MCM and 28 units; dry core cables 4,000 kilometres and 1 unit; coaxial cables 4,250 kilometres and 1 unit; aluminium wire rods 67,800 tonnes and 12 units and bare copper conductors 14,200 tonnes and 4 units.

INDIAN SCOOTERS ACTIVE IN EXPORTS

M/s. Bajaj Tempo Limited, Bombay-Poona Road, Chinchwad, Poona-19, an automobiles manufacturing unit in Western India, received export orders for vehicles, spare parts and components at a value of Rs. 2.7 million during the year ending September 1973. The firm's three-wheelers and scooters are already popular overseas. Among their overseas customers, Nigeria and Bangladesh are significant. The firm has the credit of having bagged sizeable export orders floated against global tenders. For instance, it had secured

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earlier a sizeable order worth Rs. 6.2 million from Bangladesh against stiff international competition.

The firm is progressively diversifying its range of production. Their present production includes tempo three-wheeler ('Hanseat') and tempo four-wheeler ('Viking') with different types of bodies, such as, delivery van, auto-rikshaw, oil/water tanker, refuse tank, station wagon, mini bus and ambulance. Way back in 1967, the company commenced production of four-wheelers with a licensed capacity of 4,000 vehicles per year.

India exported auto rikshaws, motor cycles, motor scooters and parts in 1972-73 at a value of Rs. 7.50 million as against Rs. 1.55 million in 1971-72. Of this, auto rikshaws alone fetched Rs. 5.86 million while motor scooters earned nearly Rs. 1 million.

Bangladesh was the largest single buyer of auto rikshaws having bought 1518 numbers at a value of Rs. 5.85 million, followed by Nigeria and Hong Kong. Motor scooters were purchased by about 10 countries amongst which Nigeria, Sri Lanka, Nepal and Sudan were significant.

Exclusively in the private sector, India's scooter industry has four units in its infra-structure. The licensed capacity in the line (including for three-wheelers) is of the order of 127,200 numbers while the installed capacity is 60,000 numbers. Additional capacity of 556,000 numbers has already been approved. The total capacity likely to materialise by the end of 1973-74 is estimated at 160,000 numbers from 30,302 numbers in 1967. The production of scooters reached a level of 64,331 numbers in 1972.

In the public sector, M/s. Scooters India Limited, Lucknow, was incorporated in 1972 for manufacturing 100,000 two-wheelers and 30,000 three-wheelers per annum. The production of two-wheelers is expected to commence in August 1974. The proposed project is a joint collaboration venture between India and Italy. M/s. Automobile Products India Ltd. and M/s. Innocenti of Italy are the collaborating firms in the respective countries.

TEXTILE MACHINERY POPULAR IN OVERSEAS MARKETS

In tune with the growing popularity of India's textile machinery in overseas markets, a Bombay firm has secured sizeable orders for supply of complete range of spinning machinery and automatic looms to Korea, Taiwan, Indonesia and Kenya. The orders add upto Rs. 72 million. Of this, the order from Korea alone is valued at Rs. 55 million. While the first lot of 15 ring frames against this order was supplied and commissioned some time back by the technicians of the Indian firm, M/s. National Machinery Manufacturers Ltd., Post Box No. 3, Thana, Bombay, the initial consignment of automatic looms has been delivered only recently. The firm's technicians are expected to be in Korea soon to supervise the erection and commissioning of the looms.

The orders from Taiwan and Indonesia are valued Rs 8 million each, while the one from Kenya is worth a little over Rs. 1 million. The first consignment consisting of 16 ring frames has already been despatched against the Taiwan order. The second lot is expected to be shipped shortly.

Prior to the above orders, the Bombay firm earned reputation in Arab Republic of Egypt and Sudan for their supply of ring frames and automatic looms worth Rs. 7.5 million. If the number of active trade iuquiries from countries like Nairobi, Tanzania and Malaysia, is any indication, the firm can be expected to improve its export business further in the near future.

The production range of the firm was initially confined to only essential spares and jobbing requirements of textile spinning machinery in India. Today, it includes ring frames, draw frames, carding engines, fly frames, doublers and automatic looms. The firm is planning to offer complete spinning plants from blow rooms to ring spinning frames. It is also diversifying its manufacturing activities to take up manufacture of machinery required for the production of synthetic fibres, hydraulic infinitely variable speed motors and gear boxes, paper printing machines and plastics extrusion presses and machinery.

The total installled capacity of textile machinery available in India is estimated to be of the order of Rs. 1170 million per year while the licensed capacity is around Rs. 1280 million. Actual production in 1972 reached a level of Rs. 306 million. During 1973 (January-September), the production was estimated at Rs. 240 million. The industry is presently manufacturing the entire range of spinning, weaving and processing machinery of high quality and latest designs. A good number of units have collaboration arrangements with the most reputed textile machinery manufacturers in the world.

The country's exports of textile machinery and parts amounted to Rs. 43.35 million in 1972-73. During the first six months of 1973-74 (April-September 1973), these exports earned Rs. 20.35 million in foreign exchange. Sweden, Switzerland, German Federal Republic, U.K. and Netherlands were the prominent importing countries.

EXPORT PERFORMANCE AND POTENTIAL

IRAN—PROMINENT BUYER OF INDIAN MANUFACTURED GOODS

Iran is an important trading partner of India. It offers an ever-expanding market for India-made manufactured products. In fact, it is the leading customer for India's engineering items. Indo-Iranian commercial cooperation assumes greater importance than ever, in the present context of world oil crisis. Indeed, there are many unexplored areas of mutual trade possibilities.

Purchases from Iran accounted for 3.5 per cent of India's total import bill during 1961-66, 3.7 per cent during 1966-71 and 6.9 per cent during 1971-73. India's exports to that country were only 0.7 per cent, 1.4 per cent and 1.3 per cent of her total exports during these periods respectively. In terms of value, Indian imports from Iran were Rs. 1215 million against her exports at Rs. 248 million only (1972-73), showing a balance of trade adverse to India at Rs. 967 million.

India's export to Iran during 1961-66 averaged Rs. 53 million per annum and began to rise from 1967-68. These were of the order of Rs. 250 million during the five year period ending 1972-73. Iran has been purchasing Indian tea consistently since 1951, average value of these exports being of the order of Rs. 40 million per annum. Jute goods and spices have also been consistently on the Iranian shopping list from India. It is, however, in respect of manufactured goods that Indian exports have developed most during the last five years. Major areas of such manufactures exported to Iran are iron and steel, non-ferrous metal products, machinery, transport equipment, paper, glass and glass-ware.

The increase was the largest in the case of *iron and steel*. While there were no supplies in 1966-67, the exports rose to 108,000 tonnes valued at Rs. 71.2 million in 1967-68 and continued to rise steadily to 130,000 tonnes valued at Rs. 94.2 million in 1969-70. They, however, declined gradually in the subsequent years and reached the lowest level of 14,000 tonnes valued at Rs. 16.6 million in 1972-73. The main items of exports of iron and steel are railway track material, bars, rods, angles and tubes and pipes. Sleepers and other railway track material of iron or steel recorded the highest level of exports in 1970-71 amounting to Rs. 36.4 million. The exports of bars, rods, angles, shapes and sections amounted to Rs. 29 million in 1970-71. The exports of tubes and pipes of iron or steel were Rs. 8.3 million in 1970-71.

Ferrous and non-ferrous metal products were supplied from India to Iran to fetch Rs. 24 3 million in 1972-73. Copper ware, rods and other copper products are the chief items of non-ferrous metals whose exports stood at Rs. 23.7 million in 1972-73. Aluminium rods, bars and angles constitute the next important item. Their exports rose from Rs. 5 million in 1970-71 to Rs. 12.2 million in 1971-72 but decreased to Rs. 6.6 million in 1972-73.

The exports of machinery and transport equipment to Iran maintained a steady rise from Rs. 11.3 million in 1967-68 to Rs. 29.8 million in 1971-72 and to Rs. 31.2 million in 1972-73. The share of these supplies in Iran's total import trade from India worked out to 8 per cent, 15 per cent and 13 per cent respectively.

Among the items of machinery and transport equipment, transport items claimed a major share of the exports to Iran which absorbed worth Rs. 15.8 million in 1970-71 and Rs. 18.3 million in 1972-73. Bicycles and other cycles accounted for the bulk of exports of transport equipment (Rs. 11 million in 1972-73).

Electrical machinery was the next important group and its exports increased from Rs. 4.2 million in 1970-71 to Rs. 8.3 million in 1971-72; they were worth Rs. 6.8 million in 1972-73. Insulated wires and flexible wires were the largest items in this group which accounted for about 80 per cent (Rs. 5.4 million) of its exports in 1972-73. The exports of non-electrical machinery items rose from Rs. 1.7 million in 1970-71 to Rs. 5 million in 1972-73.

India's exports of paper and paper-board to Iran recorded a large increase in 1970-71 when they amounted to 7.8 million kgs. valued at Rs. 13 million. In 1972-73, the exports were valued at only Rs. 2.6 million. India's share in Iran's total imports of paper and paper products is, however, very small (1 per cent).

India's exports of glass and glassware were significant in the year 1972-73 only, when they amounted to Rs. 2.5 million. India's share in Iran's imports of glass and glassware increased slightly from 1.5 per cent in 1971-72 to 3.6 per cent in 1972-73. Federal Republic of Germany and Japan were the chief suppliers in these two years.

India's imports from Iran have normally far exceeded her exports and have averaged Rs. 1000 million during the five years ending 1972-73, i.e. nearly four times of her exports. The major item of import is crude petroleum, generally accounting for more than 90 per cent of India's imports from Iran. Sulphur and dry fruits are other important items accounting for about Rs. 30 million per annum during 1971-72 and 1972-73.

Iran's significant place in the context of India's export-trade in non-traditional manufactured products is indicative of the further possibilities of trade diversification. Apart from geographical proximity, the two economies have been enjoying friendly relations. These are two major factors which should enable them to fully utilize the complementarity of their economies and identify further opportunities of mutual trade expansion. As it is, India has a large adverse balance of trade with Iran and in the present oil crisis, the imbalance in mutual trade is likely to go up. Iran's willingness to absorb a large range of Indian products, should help strike a somewhat balanced trade between the two economies.

RISE IN OVERSEAS DEMAND FOR BASIC CHEMICALS

India's export trade in basic chemicals and pharmaceuticals including soaps earned foreign exchange at a value of Rs. 638.60 million during the first eleven months of 1973-74 (April 1973 - February 1974), registering a sharp increase over the exports in the comparable period of 1972-73 at Rs. 368.15 million, according to the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council, Bombay. Interesting feature of this export uptrend was that the annual export target set for the entire year of 1973-74 at Rs. 501 million has been comfortably surpassed. During 1972-73, the actual exports were of the order of Rs. 414.60 million.

During the period under review of 1973-74 (April 1973 - February 1974) various groups of items under the purview of the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council registered sizeable improvement. Particularly, the export of drugs, pharmaceuticals and fine chemicals' group went up sharply to Rs. 324.80 million (April 73-February 74) from its earlier level of Rs. 116.35 million (April 72-February 73) registering nearly three-fold increase. Happily, the export registered more than 100 per cent increase over the target set for the group for 1973-74 at Rs. 160 million. The next group that was active in exports during the period relates to dyes, intermediates, alcohol and coal tar chemicals. It fetched Rs. 87.55 million against Rs. 61 million. The export target for the group for 1973-74 has been set at Rs. 100 million. In the group of chemicals, which secured Rs. 76.90 million as compared to Rs. 59.80 million, inorganic chemicals constituted the largest single variety of sizeable foreign exchange earning (Rs. 62.90 million against Rs. 46.95 million), followed by agro chemicals (Rs. 4.30 million against Rs. 1.55 million). The organic chemicals exports, however, slided down (Rs. 9.70 million against Rs. 11.35 million). The export target set for the full year (1973-74) for the chemicals group at Rs. 70 million has also been surpassed by the estimated figure of exports (Rs. 76 90 million).

The export position of other groups which registered improvement during April 73-February 74 over the corresponding period of the last year was : crude drugs nearly Rs. 50 million against nearly Rs. 39 million (annual target Rs. 100 million); essential oils Rs. 46.35 million against Rs. 32.85 million and agarbattis Rs. 15.80 million against Rs. 14.80 million.

The only group indicating fall in exports during the period under review was that of glycerine, soaps, detergents cosmetics and toiletries. The export value of the group came down to Rs. 32.70 million from Rs. 40.20 million.

INCREASED SUGAR PRODUCTION FOR EXPORT

The sharp rise in world prices of sugar and the improved domestic supply position of sugarcane point out to the scope for earning more foreign exchange from sugar exports from India.

At present, the highest cane yield per hectare for *Eksali* crop in the tropical region is estimated over 440 tonnes while the *Eksali* crop in Northern India is of the order of 335 tonnes per hectare. The average in tropical and sub-tropical states is nearly 75 and 40 tonnes respectively. With the applications of improved methods of cultivation, the average cane yield per hectare is expected to go up further.

The Fifth Five Year Plan aims at increased production through the implementation of sugarcane development programmes. Apart from this, centrally sponsored schemes for the development to be launched in sugar factory areas are also expected to improve the production of this crop. The cane production target at the end of the Fifth Plan has been set at 170 million tonnes to meet the projected requirements of sugar, gur and khandsari as against an estimated 134 million tonnes in 1973-74.

Besides sugarcane, sugarbeet is yet another important source of sugar. During the Fifth Plan, sugarbeet cultivation would be promoted in sugar factory areas of Punjab, Haryana and West Uttar Pradesh.

India is already exporting sugar and sugar preparations to markets the world over. During 1972-73, these exports were of the order of Rs. 139 million. During the first six months of 1973-74, the export value was Rs. 57.75 million. U.S.A., U.K., South Yemen Peoples' Republic, Bangladesh and Nepal were the principal importing countries during the period.

RECENT TRENDS IN TEA EXPORTS

India's export trade in tea totalled Rs. 1473 million during 1972-73 as compared to Rs. 1563 million in 1971-72. In terms of quantity, the exports were 193 million kgs. against 207 million kgs. in these years. It is estimated that the exports during the first seven months of 1973-74 (April-October 1973) were 100 million kgs. valued at Rs. 790 million compared to 121 million kgs. at Rs. 948 million during the corresponding period of 1972-73. The unit value realised during these periods was Rs. 7.89 and Rs. 7.84 per kg. India's share in world exports is about 30 per cent every year.

United Kingdom is the largest importer of Indian tea; it's share in the imports from India declined, however, from 49 per cent in 1968 to 35.5 per cent in 1969, 48 per cent in 1970, 35 per cent in 1971 and 28 per cent in 1972. The quantity and value of tea exported during 1972-73 to U.K. were 15.57 million kgs. and Rs. 394.16 million. There has been an upward trend in the exports to U S.S.R., other East European countries, Afganisthan, Jordan, Sudan, USA, Irish Republic, Iraq and Iran. The proportion of Indian tea exported under bi-lateral trade agreements was 45.2 per cent in 1971, 34.7 per cent in 1970 and 43 per cent in 1969. Among the bi-lateral trading partners, USSR accounted for the bulk and other East European countries and Iraq followed suit.

U. K, U.S.S.R., Netherlands, Arab Republic of Egypt, Federal Republic of Germany, U.S.A., and Afghanistan are the principal buyers of black tea in bulk from India while Afghanistan, Sudan, Dubai, Nepal, Qatar, Bahrein, Jordan and Iraq are the main buyers of black tea in packets. Black tea (dust) is mainly bought by Afghanistan, Arab, Republic of Egypt and Dubai while green tea is imported among others by Afghanistan, Spain and U.S.A.

A significant development (1971) was the manufacture and export for the first time from India of tea bags worth Rs. 86,000 (4230 kgs.). During 1972, 68,000 kgs. of tea were exported in bags at a total value of Rs. 1.46 million. Tea in bags is proving popular in U.S.A , Canada, West Europe and West Asia.

India's total production of tea during 1972 was of the order of nearly 452 million kgs. as compared to 433 million kgs. in the preceding year.

To promote the tea industry, many schemes have been formulated by the Indian Government, particularly, for replanting, replacement, extension of tea areas, provision of facilities for acquiring machinery and equipment. The Tea Board, Calcutta, with its five overseas offices in London, Brussels, New York, Cairo and Sydney is engaged in publicising the quality of Indian tea abroad. The Tea Trading Corporation aims at marketing Indian tea in consumer packs abroad.

With a view to sustaining and improving world trade in tea as also maintaining a stable level of export prices, the major tea producers of the world, led by India have a voluntary agreement under the auspices of U.N. Food and Agricultural Organisation. Besides influencing world tea trade through FAO consultation, India is also endeavouring to introduce new product variations in the world market, such as, packet tea, instant tea and tea bags. These efforts are expected to not only retain India's premier position in world beverage market, but also retain the place of the tea industry in the context of her export trade.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

HEAVY INDUSTRIAL PRODUCTION

SIGHTS SET HIGH

The public sector undertakings engaged in heavy industrial manufacture have achieved a record production worth Rs. 4090 million during 1973-74—a 44 per cent improvement over the production value during the preceding year at Rs. 2810 million. The Ministry of Heavy Industry of the Government of India have set an ambitous production target of Rs. 5500 million for the year 1974-75, according to the Ministry's Annual Report for the year 1973-74.

The public sector undertakings which have achieved the production progress referred to include M/s. Bharat Heavy Electricals Limited, M/s. Indian Consortium for Power Projects, M/s. Hindustan Machine Tools Limited, M/s. Machine Tools Corporation of India Limited, M/s. Bharat Pumps and Compressors Limited, M/s. Heavy Engineering Corporation of India, M/s. Mining and Allied Machinery Corporation Limited, M/s. Triveni Structural Limited, M/s. Tungabhadra Steel Products Limited, M/s. Bharat Heavy Plates and Vessels Limited and M/s. Engineering Projects (India) Limited.

The performance of heavy industries in the private sector under the control of the Heavy Industry Ministry has also registered substantial improvement. For instance, the production of tractors is reported to have exceeded 25,000 numbers per annum during 1973-74 as compared to only 20,800 numbers in 1972-73. Similarly, upward trends were registered in the production of commercial vehicles, sugar mill machinery, cement machinery and rubber machinery.

Also, the output of machine tools industry has improved significantly—from Rs. 527 million in 1972-73 to an estimated Rs. 640 million in 1973-74.

M/s. Bharat Heavy Electricals Limited comprising its branches at Tiruchirapalli, Hyderabad and Hardwar as also the Bhopal Electrical Unit, earlier known as the Heavy Electricals Limited has fared exceedingly well in the year under review. The Bhopal unit which is engaged in the manufacture of heavy electrical equipment required for generation, transmission and distribution of power, such as, hydraulic and steam turbines, generators and motors, as well as transformers including traction equipment for broad gauge railways, achieved an increase of 47 per cent over the previous year's production. This unit succeeded in procuring export orders worth Rs. 2.6 million for the supply of equipment and services. The overseas supply includes a 2500 H.P. AC Synchronous Induction Motor despatched to Iraq, the biggest so far exported from India. The unit received orders for a value of Rs. 9.8 million mainly from Malaysia, Kenya, Iraq and Bangladesh. The company is participating in important tenders valued at Rs. 120 million in Singapore, Malaysia, Australia, New Zealand, Kenya, Cambodia and Iraq. Their unit at Bhopal is keeping pace with other manufacturers in world in the production of boilers. The significant features of this unit's production during 1972-73 were the starting of manufacture of 200 MW boilers and incorporation of several improved features in the design and construction of boilers. It had entered into an agreement with Malaysian Electricity Board for supply of 2 x 60 MW boilers. The first boiler exported to that country is ready for operation and the second is nearing completion. The Unit has further secured an order for two boilers for Sultan Ismail Project in Malaysia against global tenders.

The Hyderabad Unit of BHEL has two plants for the manufacture of heavy power equipment and switchgears. The heavy power plant is designed to produce steam turbines and turbine generators upto a total capacity of 900 MW per annum in sizes with varying capacities upto 110 MW units. The switchgear plant of the Hyderabad unit manufactures all types of air blast circuit breakers with minimum import content. Its production was of the order of Rs. 85.5 million during 1972-73 as against the targetted production of Rs. 55 million for the year. The heavy electrical equipment plant at Hardwar improved its production value by 76 per cent during 1972-73 as compared to the previous year. In the year 1972-73 (upto February 1974), the total production was of the order of Rs. 352 million.

The production performance of the various units of BHEL stood at Rs. 1900 million during 1973-74 (up to February 1974) as compared to Rs. 1080 million in the same period of the preceding year.

The Indian Consortium for Power Projects is established to undertake supply of equipment required for electric power projects and their ancillary services. Its function is to take up contracts in India and abroad for design, manufacture, inspection, erection and commissioning of all kinds of equipment on turn-key basis. During 1972-73, the Consortium's turnover increased to about Rs. 6 million. In 1973-74, it succeeded in obtaining contracts for a value of Rs. 47 5 million including three foreign contracts valued at Rs. 17.3 million. A major export contract which the Consortium secured was for Rs. 12.2 million for the supply, erection and commissioning of mechanical equipment for the Itazhitezhi Dam Project in Zambia, the design and fabrication of which is done by the member-company of the Consortium—M/s. Triveni Structural Limited. The erection and commissioning will be done by the Consortium's own engineers. The second major export contract of the Consortium was worth Rs. 4.4 million which was secured from Cambodia

M/s. Hindustan Machine Tools Limited (Bangalore) attained an estimated production level of Rs. 400 million during 1973-74. This premier machine tools manufacturing company in India, produces 30 types of machine tools, some of which are highly advanced in design and complicated in manufacture. Of the 30 types, as many as 15 are the products of HMT's own design, developed by its own designers.

It has exported machine tools and watches of an estimated value of Rs. 21.4 million during 1973-74.

In spite of the limitations like inadequate supply of quality castings and delay in receipt of imported components, the Machine Tool Corporation of India produced machines worth Rs. 10.5 million including special accessories during 1972-73 as compared to only Rs. 5.7 million in the preceding year.

M/s. Bharat Pumps and Compressors Limited, Naini, Allahabad, is another public sector corporation in India's heavy industry. Its output range includes Reciprocating Compressors, Centrifugal and Reciprocating Pumps to meet the requirements of the fertilizer industry and steel plants, oil refineries, petro-chemical industry, air/gas extraction plants, chemicals and processing plants and oil exploration and drilling.

M/s. Heavy Engineering Corporation Limited (Ranchi) comprises three plants, namely, Heavy Machine Building Plant, Foundry Forge Plant and Heavy Machine Tools Plant. In 1973-74, the anticipated production of the Heavy Machine Building Plant was worth Rs. 400 million while the Foundry Plant succeeded in producing worth Rs. 150 million and the Heavy Machine Tools Plant worth Rs. 17.5 million.

The Mining and Allied Machinery Corporation Limited (MAMC), Durgapur is engaged in the production of various items of mining equipment including conveyors, coal cutters, mine locomotives, fans, pumps, loaders, winders and haulages. The Corporation's production rose from about 7770 tonnes (Rs. 49 million) to an estimated 18,500 tonnes (Rs. 175 million) in 1973-74. MAMC has been endeavouring to diversify its production profile and recently expanded its manufacturing range to include bulk material handling equipment for ports, steel plants and fertilizer plants which are sophisticated tailor-made items. Their development was achieved after considerable effort. Out of the country's total requirement of coal mining equipment of about Rs. 3000 million, the Corporation and its associate bodies propose to supply equipment worth Rs. 2500 million in the Fifth Five-Year Plan period.

M/s. Triveni Structurals Limited, Naini, Allahabad, is another example of successful production in India's public sector. The company is engaged in the manufacture of steel building structures, hydraulic gates, penstocks, storage tanks, pressure vessels, steel bridges, LD converters, heavy duty cranes and hoists. The company's production turnover improved from Rs. 6 million in 1969-70 to an estimated Rs. 48 million in 1973-74.

M/s. Bharat Heavy Plates and Vessels Limited, Visakhapatnam, which is engaged in the manufacture of a variety of industrial items, such as, heat exchangers, pressure vessels, digester columns, storage vessels, dished ends and technological structurals required by fertilizer, chemical and petro-chemical industries, has an installed capacity of approximately 20,000 tonnes per annum, valued at Rs. 200 million. During 1974-75, the firm is expected to produce 13,000 tonnes at a value of Rs. 130 million. It is already embarking upon a diversification plan and has recently developed a prototype chlorine container. The firm further proposes to undertake manufacture of electro-static precipitators, finned tube air coolers and forged high pressured valves.

M/s. Engineering Projects (India) Limited (Ranchi) was incorporated in 1970 as a subsidiary of Heavy Engineering Corporation Limited (Ranchi). The firm is engaged in supply of equipment for steel plants, mines, fertiliser factories and other industrial projects by entering into contracts for design, manufacture, inspection,, supply, erection and commissioning of equipment on a turnkey basis. During 1973-74 (upto Jaunary 1974), their value of business at Rs. 255 million comprised projects already implemented worth Rs. 69 million. They further propose to secure business at about Rs. 150 million by the end of March 1974. Thus, the total business likely to be received by them during the entire year of 1973-74 would be of the order of over Rs. 400 million. They have so far prepared and submitted 23 tenders for turnkey projects, both in India and abroad. Among their projects abroad are Coal Handling System for Seyitomer Thermal Plant, Turkey; Coke Oven Plant in 'Sisak', Yugoslavia; 33/11 KV Sub-Station in Kuwait; Re-rolling Project in Dubai and Project report and turnkey offer for industrial rubber plant for Sri Lanka. At home, their work on three projects - Coal Handling Plant for Haryana State Electricity Board, Silo Project for Food Corporation of India and Bailadilla Iron Ore Project (part III) is expected to be completed by the end of 1973-74.

The foregoing analysis of company-wise production and export performance among India's public sector undertakings engaged in heavy industry is only illustrative. The Heavy Industry Ministry has, besides setting an ambitious production target for the heavy industry, has also drawn up a strategy for speedy implementation of the programmes envisaged by the industry. The strategy includes the setting up of new projects in the public sector, such as, the one for the manufacture of about 25,000 tonnes of rolling mill, equipment and processing. Aside from aiming at diversification programmes in the field of production, the Ministry is also initiating concrete steps to promote the contribution of the heavy industry undertakings in the context of the economy's export drive. With fairly developed base of sophisticated industry backed by engineering consultancy, systematic efforts are under way to fully exploit the export prospects of technology and consultancy services as also to take up turnkey projects abroad.

ROLE OF PUBLIC SECTOR IN PHARMACEUTICALS

India'a total production of formulations and drugs was estimated at Rs. 4000 million during 1973-74, according to the Annual Report of the Ministry of Petroleum and Chemicals. Of this, formulations output was set at Rs. 3500 million while that of drugs was placed at Rs. 500 million.

In the total estimated production, the share of the public sector was estimated at Rs. 180 million of bulk drugs and Rs. 200 million worth of formulations or about 40 per cent of bulk drugs and about 6 per cent of formulations.

The share of the public sector is, however, expected to increase substantially during the Fifth Plan. With the outlay of Rs. 400 million proposed for the Indian Drugs and Pharmacueticals Ltd., (IDPL) and Rs. 300 million for Hindustan Antibiotics Ltd., in the Fifth Plan, the production of formulations in the public sector is expected to increase to Rs. 1060 million and of bulk drugs to Rs. 780 million.

The overall production of formulations would increase to Rs. 5000 million by 1978-79 and of bulk drugs to Rs. 2000 million.

The private sector also is expected to play its parts in filling the gap between the present level of production and likely demands in 1978-79, the last year of the Fifth Plan. Measures for stepping up production are under consideration.

There was overall increase in the production of most of the essential drugs during 1973. Major increase over the previous year's production was achieved in respect of Antibiotics, Anti-Dysentery Drugs, Anti-Diabetic Drugs and Insulin, Anti-Leprosy Drugs, Anti-Pyritics/Analgesics, Anti-T.B. Drugs, Alkaloids, Sulpha Drugs and Vitamins.

During the year, imports of more bulk drugs were canalised through the State Trading Corporation. The number of items canalised for imports was 15 in 1970-71 but increased to 36 in 1973-74. The value of canalised imports also increased correspondingly from Rs. 63 million in 1970-71 to about Rs. 170 million in 1973-74.

ELECTRO-HYDRAULIC GOVERNOR FOR HYDRO-ELECTRIC POWER STATIONS

M/s. Bharat Heavy Electrical factory at Bhopal has successfully developed for the first time in India, Electro-hydraulic Governor for Hydro-electric Power Station. The first Unit of this equipment has been indigenously built at Bhopal for Ramganga Hydro-electric Project in Uttar Pradesh.

Technical know-how needed for this product was jointly generated by the Bharat Heavy Electricals Ltd., Bhopal and Indian Institute of Technology, Kanpur utilising the latest electronic sophisticated components, such as, transistors, thyristors, integrated circuits etc.

Considerable saving of foreign exchange is expected from the manufacture of these units.

In addition, the Bhopal factory has already supplied sophisticated electronic equipment valued at Rs. 7.5 million to Railways and other power generating stations.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

TEA SORTING UNIT DEVELOPED

A new tea sorting unit that does the job of five different machines has been invented by a technician of M/s. MACTEA (India), Calcutta. The invention has resulted in reduction in capital cost, space requirement, power and labour, giving at the same time an improved quality tea.

The traditional method of tea sorting is a cumbersome process involving, as it does, five different machines : a wire-mesh screen to separate the balls, a fire extractor fitted with PVC rollers, a stalk extractor, a sorter having sieves of different mesh sizes, and finally what is known as a "Jawa tunnel" wherein the sorted leaves are subjected to winnowing by a blower to separate light leaves, fibres and dust. The leaves have to be fed and collected at five different points, manually or by semi-conveyor arrangement.

The new sorter combines the functions of all these five machines into one compact unit with only one feeding and one collection point. It also provides a dust-free chamber and gives higher yields of better quality tea. It sorts out the smaller grades of tea leaves first rather than the other way round, a feature that makes it more economical.

In the new machine, the fermented leaves from the drying chamber are fed into a ball removing machine (Ballex) which discharges them on to a fibre extractor (Fibret) comprising an endless conveyor belt fitted with PVC rollers. The ball and fibre-free leaves are than discharged into a tea sorter fitted at the front side of a 13 x 15 ft. chamber and equipped with five single-tier sieves for separating the primary grades. At the other end of the chamber, there is a centrifugal fan that provides balanced winnowing as the tea leaves drop from the sieves. The primary grades come out of the chamber on five conveyor belts, while another conveyor belt at the rear brings out the mixed secondary teas.

The machine produces uniform size grades with better bloom appearance as it sorts out the leaves through smoothly perforated aluminium sheets instead of hard rubbing wire-meshes. All the movements of the leaves are controlled by a single switch. The average sorting capacity of the machine is 4,000 kgs. tea per shift.

The new tea sorter has resulted in substantial savings in the cost of machinery (from about Rs. 28,000 to Rs. 17,000), working space (1,800 sq. ft. to only 600 sq. ft.) and labour requirement (five to one). It is a significant step towards automation and replacement of outdated techniques followed by the traditional tea processing industry.

SEMI-CONDUCTOR STRAIN GAUGES DESIGNED

The Solid State Physics Labortary, Lucknow Road, Delhi-7, has successfully designed semi-conductor strain gauges which are used for measurement of strain in the engineering structures. Presently, electrical wire resistance strain gauges manufactured indigenously, are used for the purpose, but they suffer from a serious drawback of not being sensitive enough.

Present demand is expected to be small, but with the availability of indigenously manufactured strain gauges, the demand is likely to grow considerably to about 1000 units per annum.

The process essentially involves obtaining from silicon ingots small silicon filaments of about 1 cm. long, few millimetres wide and about one millimetre thickness with the length oriented parallel to the appropriate crystallographic direction. The filaments are etched and gold contacts provided for ohmic contact at both ends. The gold wires are in turn spot welded to Ni electrods for external connection. This filament along with the electrodes, is mounted on fibre glass backing and impregnated with epoxy, which is then ready for use. A very close control of various processes in fabrication will be necessary as the end-product cannot be tested individually, because testing method is destructive.

Semi-conductor strain gauges will not, however, replace the existing wire gauges but supplement them in special situations where higher sensitivity is required. The performance of semi-conductor strain gauges is, no doubt, affected by temperature and as such special precautions are required to be adopted to reduce the temperature effect.

The main features of such a gauge include high sensitivity, direct-working and positive or negative gauge factor; the voltage output is 50-100 time greater than conventional gauges. Amplification is necessary for many applications. It simplifies the use of balanced or bridged circuits.

About 200 pieces of the unit have since been fabricated by the laboratory. A few samples are available for display.

Main raw materils required for the manufacture of such gauges are silicon rods (.01 ohm cm. - .02 ohm cm.), doped gold wires (3 mm. dia.), nickel strips (.2 mm. wide), fibre glass types (.5 to 1.0 mm. thick) and epoxy.

Diamond slicing machine, lapping machine, polishing machine, optical orientation set-up, four probe for resistivity, minietcher, vacuum evaporation unit, thermo-compression bonding machine, diamond scribing machine, hot air oven, gauge testing machine and measuring instruments are the main items of equipment required in the process. Some of the equipment have, however, to be imported while the rest are either available indigenously or fabricated locally.

KILN FOR BURNING LIMESTONES DESIGNED

At present, lime burning is mostly practised in country-type rectangular "bhatis". These are not only highly heat-wasteful but the lime produced is also not of uniform quality, being overburnt and underburnt in different pockets of the kiln. Moreover, these kilns cannot be used for burning under stricter controls as is necessary for burning dolomitic and certain other types of stones.

In order to eliminate such drawbacks, the Central Building Research Institute (CBRI), Roorkee, has developed design of a kiln, which is amenable to much better controls and having high thermal efficiency. This has been successfully used for burning magnesium and dolomitic limes at stipulated temperatures. It has also been found suitable for burning high calcium limes and chemical grade limes. It burns about 10 tons of limestone per 24 hours.

The newly designed kiln by CBRI has many salient features. It is a brick masonry structure. The kiln design ensures both smooth running of kiln and periodic withdrawal of lime. It lands to a fair degree of instrumentation, if need be. The kiln works on natural draft and has arrangements for its control. It works continuously but it can also be adopted for day working only. The kiln is thermally efficient and heat losses are minimum. It produces uniform quality lime as it aims at avoiding overburning or underburning of limestone. Lime produced in this kiln under standardised working conditions will have little core or unburnt material. The kiln can be operated by trained skilled labour. Contamination of burnt lime with fuel is minimized. It can produce 4-5 tons of lime per day.

Because of the monopolisation of high calcium limestones for steel, chemical, paper and sugar and other industries, building industry will have to depend in future upon dolomitic limestones. The latter cannot be burnt in existing rectangular kilns, and special type of kilns will be required for this purpose. This kiln design is capable to meet such necessity. Moreover, it is equally suitable for burning high calcium limestone too.

A separate scheme for instrumentation is being worked out by CBRI, which can also be appended to the present scheme and will be found to be highly useful in securing stricter control of the operation of the kiln.

Total refining capacity in India is planned to be ncreased to 36.5 million tonnes a year during the Fifth Five Year Plan once the 2.5 million-tonne refinery at Haldia goes on stream by the middle of 1974, followed by the setting up of one-million tonnes refinery at Bongaigaon in Assam, expansion of the existing Koyali (Gujarat) refinery by 3 million tonnes and construction of the 6-million tonne Mathura Refinery during the Plan period.

Nine refineries in operation during 1973 processed 20.52 million tonnes of crude of which 11.49 million tonnes was processed in the five public sector refineries and 9.03 million tonnes in the four private sector refineries. The crude processed in the private sector refineries included 1.1 million tonnes supplied by the Indian Oil Corporation for processing.

At the beginning of the Fourth Plan, eight refineries with a total capacity of 16.25 million tonnes per year were in operation. With the Madras Refinery going on stream and expansion of the Cochin Refinery in the last year of the Fourth Plan, the capacity increased to 24 million tonnes including the spare capacity available with the private sector refineries. Haldia would add 2.5 million tonnes to this capacity to which another 10 million tonnes would be added during the Fifth Plan by the Bongaigaon, Koyali Expansion and Mathura units.

The total production of lubricating oil base stocks in 1973-74 was 4,70,000 tonnes against a total consumption of approximately 6,01,000 tonnes of lubes and greases. To meet the increasing requirements of lube base stocks during the Fifth Plan it was proposed to debottleneck and expand the capacity of Lube India and Madras Refinery lube plants. Lube India was planning to raise the capacity from 1,64,000 tonnes to 2,40,000 and the Madras Refinery from 2,00,000 tonnes to 2,70,000 tonnes per year. The demand for bright stocks was expected to be met when the Haldia Refinery Lube plant goes on stream at the end of 1974.

India, efforts are being made to reduce consumption through fiscal means, reclamation of used lubricating oils and marketing of higher quality lubricating oils which would reduce consumption by increasing drain period.

The paramount need to intensify indigenous oil exploration in the context of the present world oil crisis, is amply appreciated in the country. Indigenous production accounts for a third of the country's requirements of oil and the balance is to be imported. The two principal agencies for indigenous exploration - the public sector Oil and Natural Gas Commission and the joint sector Oil India Limited are together producing a little over 7 million tonnes of crude per year. The two agencies have discovered a total of about 175 million tonnes of recoverable oil reserves and have already given a cumulative production of about 60 million tonnes leaving a balance of nearly 115 million tonnes yet to be exploited.

Available oil reserves in the country are very insufficient taking into consideration the fact that in another five year's time the country's requirements of crude may be of the order of 40 to 43 million tonnes per year.

In this context, reference can be made to the joint Techno-Economic Plan prepared by Indian and Soviet experts for increasing ONGC's oil production which is currently a little over 4 million tonnes per year. This Techno-Economic Plan has since been integrated with the Fifth Five Year Plan.

At the end of the Fifth Plan period ONGC production is expected to go up to 8.42 million tonnes per year which together with the Oil India's steady production of 3 million tonnes would raise total indigenous production to 11.42 million tonnes. In addition, during the Fifth Plan period, at least 70 million tonnes of recoverable reserve would also be located through intensified exploration efforts.

During 1973, the Oil and Natural Gas Commission continued drilling on 21 structures. Six new structures were also taken up during the year. Between April and November 1973, 35 wells were drilled in Gujarat, Assam, Uttar Pradesh, Tamil Nadu and the Arabian

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Sea taking the total number of wells drilled and completed by the Commission from its inception to 1044. Of these, 625 were oil/gas bearing.

Exploratory efforts had been extended to the continental shelf areas as well. The Oil and Natural Gas Commission had acquired a self-propelled mobile drilling platform 'Sagar Samrat' and had started drilling operations in the Arabian Sea area near Bombay.

The first well drilled with 'Sagar Samrat' on the Tarapur structure encountered high pressure problems leading to temporary abandonment of the well.

The second well, which was drilled on the Bombay High structure, had proved successful. There has been a significant oil discovery at the shallow depth of 962 to 989 metres. Two more oil bearing horizons has been discovered in the same well at depth of 1350 and 1612 metres. Drilling was being continued to the projected depth of 2000 metres.

After production testing of the well on the Bombay High structure, it is proposed to take up further drilling operations to establish the potential of the field.

The ONGC is considering a proposal to acquire a second drilling vessel for off-shore exploration. The government proposes to steadily strengthen production capabilities within the country and ONGC has already placed orders for a fully equipped seismic survey ship which was expected to be delivered sometime in January 1975. This vessel would help intensify and speed up detailed seismic survey of the rest of off-shore areas and facilitate quicker exploration.

Apart from the off-shore venture in Iran through its wholly owned subsidiary, the Hydro-Carbons India Pvt. Ltd., the Oil and Natural Gas Commission had during 1973-74 signed a contract for exploration of a 4175 sq. kilometres area in Iraq. The Government is also considering collaboration with foreign oil companies in exploring some of the off-shore areas. This is expected to speed up discovery and development of new oil fields. ☐

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CAST IRON BED PLATES TO CZECHOSLOVAKIA

The Heavy Engineering sector in India has achieved appreciable growth over the years and has even made a dent in the export field. A public sector unit engaged in the manufacture of heavy machinery, structurals, machine tools and a variety of related equipment, M/s. Heavy Engineering Corporation (HEC), Ranchi (Bihar), have secured an order for supply of 42 cast iron bed plates to Czechoslovakia. Valued at over Rs. 1.45 million, the order is stated to be the biggest of its kind to be placed on HEC.

In fulfilment of the order, the first consignment of three plates has already left the Heavy Machine Tools plant of HEC. Another lot of ten plates is ready for despatch.

These bed plates were cast at the Foundry Forge Plant, the biggest of the three units of HEC and were machined at the Heavy Machine Tools plant. Weighing about 7 tonnes each, the plates are supplied for manufacturing horizontal boring machines which are also being produced by HEC at their Heavy Machine Tools Plant.

Of the three units of HEC, the Heavy Machine Tools Plant (HMTP) is designed to manufacture machine tools including centre lathes, radial drilling machines, horizontal boring and turning mills, vertical boring and turning mills and cylindrical and rolling grinding machines. The Heavy Machine Building Plant (HMBP) is engaged in the manufacture of various items of heavy machinery including equipment for coke ovens, blast furnaces, steel melting, crushing and grinding, rolling mills, cranes, excavators and heavy oil drilling rigs. The Foundry Forge Plant (FFP) is designed to meet the requirements of casting and forging of the aforesaid plants as also those of other heavy engineering industries.

India's export trade in engineering goods, including the heavy machinery sector was of the order of Rs. 1505 million in 1972-73. In 1973-74, (April 73-February 74), the value of these exports amounted to Rs. 1490 million, according to the Engineering Export Promotion Council, Calcutta.

TEXTILE MACHINERY IN EXPORT TRADE

Among a variety of industrial machines exported by India, textile machinery has carved out a significant place for itself. The exports of such machinery and parts totalled Rs. 43.35 million in 1972-73. In the months that followed, the export trend registered sizeable improvement. The export destinations included developed economies like Sweden, Switzerland, German Federal Republic, UK and Netherlands.

If the performance of a single manufacturer-exporter in the line, M/s. Lakshmi Machine Works Ltd., Coimbatore (Tamil Nadu) is any indication, the industry can be said to have brighter future prospects. As at the end of 1973, the firm exported textile machinery worth Rs. 32.60 million. Export orders on hand with the firm at the same time amounted to as much as Rs. 97.50 million.

In addition to direct exports of its machinery, the firm is also associated with a joint venture and turnkey project abroad undertaken by one of its sister concerns, M/s. Lakshmi Textiles Exporters (P) Ltd., Coimbatore. The joint venture by the firm's sister concern relates to the setting up of Chimpaka Negri Lakshmi Textiles SDN, Berhad, in Malaysia. The firm (M/s. Lakshmi Machine Works) is to supply textiles machinery worth Rs. 8 million for this project. Additionally, the firm will also supply textile machinery worth Rs. 30 million against a turnkey project which their sister concern have concluded with Sudan for a total value of Rs. 80 million.

The production range of M/s. Lakshmi Machine Works Ltd. includes combers and sliver and ribbon lap machines. With increasing demand for these products, the firm has sought for official approval to double its licensed capacity for these products. The expansion schemes of the firm also include setting up of a second unit in Tamil Nadu near Hosur for the manufacture of pirn winders in collaboration with Schweiter Engineering Works Ltd. The firm has already obtained approval of the Government of India for installation of this unit. An automatic looms project is also to be set up at Hosur by the firm's sister concern, M/s. Lakshmi Automatic Looms Works Ltd. This project is to come up in collaboration with Ruti Machine Works Ltd. of Switzerland.

Alongwith the progress in the export field, the firm has recently set up a Research and Development Division. Creditably, within a year of its operation, the Division has developed the technical know-how given by their collaborators to suit Indian conditions. They have also developed a two-in-one-twister machine with the know-how obtained from South India Textile Research Association. The firm is hopeful of developing this product commercially in a short time, eliminating the need for foreign collaboration.

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India's annual installed capacity of textile machinery was of the order of Rs. 1170 million (1973) while licensed capacity was Rs. 1280 million. Actual production during the first three quarters of the year was of the order of Rs. 510 million. In 1972, it touched a level of Rs. 683.30 million.

SUCCESS IN HANDLOOM EXPORTS

Notwithstanding the achievement being made in the export of non-traditional manufactured products, the traditional sector of Indian industry including handlooms and handicrafts continues to contribute appreciably to the foreign exchange earning of the country. India's handloom exports, for instance, touched a level of Rs. 480 million during 1972-73. In the first half of 1973-74 (April-September, 1973), the export value was of the order of Rs. 212 million as against nearly Rs. 207.5 million in the corresponding period of the preceding year.

The items exported during the six months of 1973-74 included cotton handloom fabrics (Rs. 87.5 million); real madras handkerchiefs and lungies (Rs. 29 million); lungies and sarongs (Rs 15.60 million); cotton handloom shirtings including crepe, durries and case ment (Rs. 3.2 million); cotton handloom made ups (Rs. 23.50 million); mulberry silk fabrics (Rs. 48.20 million) and tasar silk fabrics (Rs. 9.3 million).

In tune with this uptrend in exports of handlooms, the All India Handloom Fabrics Marketing Co-operative Society Ltd. (Janmabhoomi Chambers, Fort Street, Bombay) have a proven record of export success. The Society succeeded in stepping up its exports to Rs. 26.10 million in 1972-73 (July 72 - June 73) from Rs. 10.50 million in 1968-69; Rs. 13.15 million in 1969-70; Rs. 13.70 million in 1970-71 and about Rs. 17.70 million in 1972-73. The total sale turnover (including internal sales and exports) of the Society in the year ending June 1973 was of the order of Rs. 60 million.

Creditably, the Society supplied handloom goods and garments to as many as 50 countries of the world. The prominent importers for their products included Canada, USA, Japan, Australia, UK, West Germany, France, Finland, Sweden, Denmark, Nigeria, Malaysia and Bangladesh.

Set up in 1955 under the sponsorship of the All India Handloom Board, Bombay, the Society is engaged in organising and developing markets for Indian handlooms, both within the country and abroad. To this end, the Society has a chain of handloom houses/export departments in important cities in India alongwith its overseas branches at Kuala Lumpur, Singapore, Lagos and Mauritius. It has also stationed export promotion officers at Hamburg, Nairobi, Djibouti, Lagos, Kuala Lumpur and Tokyo to book orders from importers in their jurisdictions.

EXPORT PERFORMANCE AND POTENTIAL

STC'S EXPORT PLAN IN WEST ASIA

The State Trading Corporation of India has evolved a strategy for massive export drive to the West Asian countries in the context of the recent oil crisis, and the mounting oil import bill. Under this strategy, select items have been identified as growth points of exports to West Asia; the major items are cement, basmati rice, sugar. textiles, jute goods and spices. These items are sought to be exported to Iran, Iraq, Syria, Jordan, Lebanon, Saudi Arabia, Kuwait, Bahrein Islands, Oman, Arab Republic of Egypt, Arab Republic of Yemen and Peoples Democratic Republic of Yemen.

With this strategy in view, STC has already sold 300,000 tonnes of cement to Iran, besides selling sizeable quantities of sugar to West Asian Markets at international prices. A considerable quantity of basmati rice is also being offered for supply to West Asian countries.

STC has also sold large quantities of textiles worth Rs. 20 million to Iraq and jute goods to Kuwait worth about Rs. 6.3 million.

The payment from the West Asian countries against these exports would be in free foreign exchange and the sale would be mostly under letters of credit for 100 per cent value.

Potential items of exports to West Asian countries included in the STC's strategy are rice and other food grains, tea, building materials, iron and steel products, textiles, cement, fishing and cold storage equipment in respect of Abu Dhabi; Spices, tea, coffee, fruits and vegetables, tobacco and manufactures, wood, timber, dyeing and tanning materials, medicinal and pharmaceutical products, essential oils, textiles (including yarn and made-ups), machinery and transport equipment, electrical machinery and appliances, household goods in respect of Bahrein Islands; rice, pulses, fresh fruits and vegetables, iron and steel products, cement, sanitaryware, furniture, textiles (polyster and cotton mixed), airconditioners and transistor radios in respect of Dubai; iron and steel products, jute manufactures, internal combustion engines, electric fans, mechanical deep pumps and parts, bicycle parts, industrial machinery (mainly sugar, cement and textiles), wires and cables, tea, spices and textiles (furnishing materials) in respect of Iran; jute manufactures, tea, iron and steel and products, electric fans, bicycles and parts, industrial combustion engines, machine tools and pulses in respect Iraq; iron and steel products, electric fans, insulated cables and wires, auto spare parts, spices, tea, rice, fresh fruits, vegetables and juices, cotton textiles, cement and construction materials in respect of Kuwait; food grains, rice and pulses, spices, tea, fresh vegetables and fruits, textiles, cement, iron and steel products, glazed tiles and sanitaryware, and diesel engine pump sets in respect of Oman; spices, tea, coffee, sugar, textiles, electrical goods, electrical apparatus and equipment, domestic utensils, cutlery, refrigerators and air-conditioning equipment, sanitary fittings, leather goods (especially footwear), glass manufacture, medical supplies, iron and steel manufactures and plant and machinery in respect of Qatar and tea, coffee, spices, cardamom, ginger, turmeric, rice, pickles, tobacco, fruits and vegetables, timber, textiles made-ups, steel round bars, pipes, electrical goods, diesel engines, pumps and parts, chemicals and pharmaceuticals and drugs, auto parts, durries, handicrafts, engineering goods, jute manufactures and plastic goods in respect of Saudi Arabia.

RECENT MEASURES TO IMPROVE INDIA'S BALANCE OF PAYMENTS

The recent escalation in the price of oil products and general price inflation in the international markets have created difficult balance of payments position for the Indian economy. To earn more foreign exchange and to meet the gap between the Country's import bill and export capacity, it has indeed become essential for the economy to mobilise special efforts. Some of these measures relate to strengthening of production base of export oriented industries, providing new dimension to the country's import policy with a view to promoting exports, allocation of indigenous and imported raw materials for export production and streamlining the organisational infra-structure and improving the share of public sector undertakings in the context of external trade.

Export oriented industries are accorded priority treatment in the matter of allotment of imported and indigenous raw materials. Alongwith this, the Indian Government is providing other facilities for expansion and establishment of enterprises in the field of export oriented industries. These measures include provision of liberal financial, technical and managerial assistance to those industries that export a certain proportion of their production, liberal foreign collaboration for the establishment of enterprises which are again mainly export oriented and special development programmes for promotion of output of major commercial crops having a bearing on exports, namely, raw cotton, raw jutes, oilseeds and tobacco.

The current import policy (1974-75) is typically oriented towards export promotion. It provides maximum facilities for export units and registered exporters as well as eligible export houses. Even those manufacturing units which are engaged in non-priority industries can be assured of priority treatment if they succeed in exporting at least 20 per cent of their production. For those of the export products the rate of import replenishment for which is less than 50 per cent, an additional allocation of foreign exchange equivalent of 10 per cent of the normal replenishment would be allowed to exporters. This is to cover up the disadvantage which exporters are likely to face on account of high prices of imported raw materials and of even higher domestic prices.

Already there is a scheme under which indigenously available raw materials are supplied to exporters at international prices. The scope of the scheme has been enlarged under the current import policy to cover more items. Further, under another new scheme import licences for raw materials granted to actual users engaged in certain industries would be issued subject to the condition that 10 per cent of the production would be set off for exports.

In an effort to strengthen the institutional infrastructure to promote exports, two bodies namely, Leather Development Corporation and Iron Ore Board are sought to be constituted. An Export Processing Zone for electronic equipment and components has also been set up near Santa Cruz to enable the country to increase the exports substantially.

The Government of India have also instructed public sector undertakings to intensify their export efforts. In respect of those public sector enterprises which have export potential, a co-ordinated programme is initiated under which foreign offices of the existing marketing companies would be utilized better, their resources would be strengthened to cater to the entire public sector and new trade offices abroad would be opened.

INDIAN SAREES POPULAR ABROAD

Indian sarees have had a Rs. 43 million export market in 1972-73. Despite climatic differences and surprising range of fashion trends, the saree has found a permanent place in many a feminine wardrobe abroad.

Cotton sarees constitute the major area of Indian supply which fetched the bulk of foreign exchange (Rs. 30 million) accounting for nearly 70 per cent of the export value during 1972-73. The export range in the group includes a variety of sarees, such as, handloom and powerloom sarees, dyed sarees, coloured sarees, unbleached and bleached sarees, piecedyed and yarn dyed sarees, sarees of carded yarn and combed yarn and handprinted sarees. In all these varieties, handloom and powerloom sarees constitute the most popular variety abroad which secured as much as Rs. 17.60 million, more than 50 per cent of the total earning of cotton sarees (Rs. 30 million). Bangladesh was the largest single buyer of this variety, followed by Somalia. Other varieties of cotton sarees were imported by a number of countries in which Sudan, Saudi Arabia, USSR, Malaysia, Mauritius and Singapore were prominent.

Silk sarees which secured Rs. 7.43 million in the preceding year brought in increased foreign exchange earning at Rs. 10.25 million in 1972-73. In this group, different varieties of silk sarees (zari embroidered and having different percentages of silk handloom) were active in export. Singapore, Federal Republic of Germany, U.K, Malaysia, Kenya, Poland, USA, Mauritius, Zambia and Lesotho were the principal importers.

Sarees made from man-made fibres were also in demand abroad during the year. The export earning in this field was valued at over Rs. 2 million; UK, USA, Sudan, Bangladesh, Bahrein Islands, Fiji Islands, Singapore and Dubai were the important destinations. Mill rayon sarees, handloom-rayon zari embriodered sarees, terylene and dacron sarees and handloom sarees of man-made fibre were the specific varieties supplied abroad.

Sarees in super fine category with fire-retardent property are stated to have been manufactured by a Bombay textile firm, M/s. Century Mills, on an experimental basis.

TRADE PROSPECTS WITH UNITED ARAB EMIRATES

United Arab Emirates comprises Abu Dhabi, Dubai, Sharjah, Ajman, Umal Qailwain, Furairrah and Rasal Khaimah.

Imports of the United Arab Emirate are mostly through Dubai and Abu Dhabi. India's total exports during 1972-73 to Dubai and Abu Dhabi were Rs. 79.7 million and Rs. 12.6 million as against Rs. 49.6

million and Rs. 8.1 million in the corresponding year of 1971-72 respectively.

In the year 1972-73, the main items of exports to Dubai and Abu Dhabi have been food (Rs. 24 million and Rs. 1.4 million); Crude materials (Rs 1.3 million and Rs. 0.4 million); Chemicals (Rs. 4.8 million and Rs. 3.1 million); Textiles, excluding jute manufactures (Rs. 14.8 million and Rs. 1 million); Building materials (Rs. 6.7 million and Rs. 3 million); Household equipment excluding electric (Rs. 1.4 million and Rs. 0.2 million); Machinery other than electric (Rs. 2.8 million and Rs. 0.4 million); Electrical machinery, apparatus and appliances (Rs. 3 million and Rs. 0.6 million) and Transport equipment (Rs. 1.9 million and Rs. 0.6 million).

India's imports from Dubai and Abu Dhabi taken together, during 1972-73, were of the order of Rs. 0.55 million and Rs. 0.69 million as against Rs. 0.86 million and Rs. 0.04 million in 1971-72.

The three items - food, chemicals and building materials-constitute 60 per cent of India's total exports to Abu Dhabi. As regards Dubai, the two traditional items - food and textiles - together constitute nearly 50 per cent of India's total exports to Dubai. The important food items which Abu Dhabi imports from India are fruits and vegetables, tea, spices, confectionery etc. Indian tea is a traditional item without any serious competitor in Abu Dhabi. There is good scope for stepping up India's exports of these items to this region.

Since the oil crisis, the question of increasing India's exports to the Gulf countries, has been engaging the serious attention of all concerned and in that context certain commodities are being mentioned. Of these, Basmati rice is one. Considering the combined imports of Abu Dhabi and Dubai as the total import requirements of U. A. E. annual demand for rice in this region is estimated to be between 40,000 tonnes to 45,000 tonnes. India exported only 2,900 tonnes valued at Rs. 6.44 million during 1972-73. There is an ample scope of increasing export of Basmati rice to this region.

Other food items in demand in this region are meat and meat products, fresh and preserved vegetables (particularly onion and potato fresh), preserved fruits, fruit products, spices and biscuits. The rising demand for these products in the region can be well met by supplies from India. Raw tobacco and cigarettes offer other examples in this context.

Two minerals-bentonite and barytes excluding barium oxide - occupy a respectable position in India's export trade to these countries as they are essential for the oil industry.

In the chemical group, hydrocholoric acid and sulphuric acid, used, mainly for the purpose of acidifying of petroleum wells and petroleum refining wells respectively occupy a prominent position in the list of commodities imported in Abu Dhabi and Dubai. Due to the existence of a net-work of oil companies operating in the United Arab Emirates, demand for these two chemicals is expected to be large. Indian chemical industry can enter into this field. India can also supply paints and varnishes, medicinal and pharmaceutical products, perfumery and cosmetics, soaps etc. Exports of these items into this region have a good potential.

Indian exports to the United Arab Emirates, though small in size at present, have good prospects for its enlargement in scope and magnitude in the years to come.

UPWARD TREND IN GEM AND JEWELLERY EXPORTS

India's exports of gems and jewellery items during the first eleven months of 1973-74 were of the order of Rs. 925 million as against Rs. 638 million during the corresponding period of 1972-73, registering an increase of 45 per cent. If the export performance in the eleven months of the year is any indication, the export target set for the year 1973-74 at Rs. 1000 million will indeed be of easy attainment.

The exports of diamonds during the period amounted to Rs. 764 million against Rs. 523 million effected during the corresponding period of last year. The export of other precious and semi-precious stones also showed an increase of Rs. 40 million during April-February 74 against the exports effected during the corresponding period of the preceding year. The total exports of precious and semi-precious stones amounted to Rs. 133 million during April-February 74 while the exports for the same period in the previous year amounted to Rs. 93 million. The increase in export was considerable in non-gold and imitation jewellery which jumped to Rs. 19 million during the period against a little over Rs. 8 million recorded during the same period last year. However, there was a decline in the export of pearls, gold jewellery and synthetic stones.

Prominent among principal importing countries of the gems and jewellery items are U.S.A., Belgium, Hong Kong, Japan, U.K., Netherlands, Switzerland, France, Federal Republic of Germany, Singapore, Australia, Canada, Saudi Arabia and U.S.S.R.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PUBLIC SECTOR ENTERPRISES EARN PROFIT

India's Public Sector enterprises collectively earned a net profit of Rs. 177.4 million in 1972–73 against a net loss of Rs. 191.5 million in 1971-72.

Of the 101 running enterprises in 1972-73, 67 enterprises earned a total net profit of Rs. 1044.6 million while the remaining 34 suffered a total net loss of Rs. 867.2 million.

The net profit was arrived at after allowing Rs. 2350 million for depreciation and amortization, Rs. 120 million write-off of deferred revenue expenditure, Rs. 1620 million for interest payment and Rs. 630 million for taxation.

The Annual Report (72-73) on the working of Industrial and Commercial Undertakings of the Central Government further reveals that *the foreign exchange earned from exports by India's public sector units during 1972-73 amounted to Rs. 740 million as against Rs. 660 million in the preceding year.* The main items exported by these units were iron and steel, iron ore, petroleum products, machine tools and wrist watches, electronic communication equipment and fertilisers.

In addition, foreign exchange of the order of Rs. 1250 million was also earned by Air and Shipping Corporations and ship repair units through services rendered. Of this, the earnings by the two air-corporations viz. Indian Airlines and Air India account for Rs. 770 million, the Shipping Corporation Rs. 445 million and other ship repair and air-craft overhaul, Rs. 25 million.

The Report further reveals that the overall investment in public sector enterprises on March 31, 1973 amounted to Rs. 55710 million comprising that of Central Government (Rs. 50,670 million), State Governments (Rs. 90 million), Indian private parties (Rs. 1290 million) and foreign private parties (Rs. 3660 million).

The pattern of investment showed that Rs. 45,600 million had been invested in manufacturing companies, Rs. 8664.7 million in servicing companies, Rs. 315 million in Insurance Corporations and Rs. 1128.5 million in undertakings which were still under construction.

Indian Oil Corporation with Rs. 221.7 million was the leading profit making public sector undertaking in the country, followed by Shipping Corporation of India Ltd. (Rs. 80.8 million), Bharat Heavy Electricals Ltd. (Rs. 74 million), Heavy Electricals (I) Rs. 73.2 million and Oil and Natural Gas Commission (Rs. 67.6 million). In all, there were 19 enterprises which earned net profit exceeding Rs. 10 million.

STEP AHEAD IN COMPUTER TECHNOLOGY

With the development of sophisticated computer TDC-16 by M/s. Electronics Corporation of India Limited (ECIL), Hyderabad, India took a step ahead in the field of computer technology. The new computer has a capacity to make 400,000 additions and substractions per second.

The new third generation computer is considered to be an improvement over the previous computer TDC-12, developed and marketed by ECIL earlier. It is reported that ECIL has further completed design of a much more sophisticated computer called TDC-312.

During 1972, in the organised sector, there were 3 units engaged in the manufacture of computers. The combined installed capacity of these units was placed at 44 numbers while the actual production during the year was 30 numbers valued at Rs. 15.55 million.

In the preceding year, the installed capacity of 38 numbers was spread over 2 units and their actual production was 30 numbers valued at Rs. 9.50 million.

India is already exporting electrically and manually operated calculating machines. During 1972-73, these were supplied to developed countries like Hungary, Federal Republic of Germany and Sweden at a value of Rs. 0.40 million.

FIRST SCIENTIFIC SATELLITE TO BE LAUNCHED SOON

The first scientific satellite completely designed and fabricated in India will be put into orbit using a Soviet launch vehicle towards the end of 1974.

The satellite will carry three scientific experiments for investigations in X-ray astronomy, for measuring the neutron and gamma ray flux from the sun and for measuring ionospheric parameters.

According to the Annual Report of the Department of Space for 1973-74, the pre-prototype of the satellite structure, along with its various sub-systems, has been developed and tested for space conditions. All components and sub-systems have been subjected to rigorous tests to withstand the dynamic loads and vibrations during launch and separation of the satellite. The prototype structure of the satellite has also been qualified against vibration at different frequencies and gravity levels. The satellite structure is now undergoing static tests before the final space qualifications.

The report further reveals that the Menaka-I sounding rocket, which is capable of taking meteorological payloads to altitudes of 55 km above, will become operational by the end of 1974. The largest sounding rocket of the series, RH-560, has been undergoing flight tests and will have the capability of carrying 90-kg payloads to an altitude of 320 km.

Progress has been made in developing rocket cases, pyrolytic graphite, spray coating of refractory materials, development of ceramic coatings, alloys for gyro application and metallic magnets for control, guidance and instrumentation. Special purpose machines, such as, polar, helical and nozzle-winding machines up to 1,000 mm diameter for the fabrication of fibre-glass hardware have been developed.

During the year under review, 106 rockets were launched from the Thumba Equatorial Rocket Launching Station (TERLS). These included sounding rockets for scientific investigations, meteorological rockets and flight tests of rockets under development.

A national range is being developed at Sriharikota for the launching and testing of indigenously developed multi-stage rockets - sounding rockets and satellite launch vehicles. A total of 19 test rockets have so far been launched from this Range.

The satellite instructional television experiment aims at demonstrating the efficacy of television as a medium for development in backward rural areas and in establishing the basic knowledge for future developments. The one-year experiment, scheduled to begin in 1975 will consist of a direct satellite television broadcasting to 2,400 villages in six selected areas of the country.

Space technology provides new techniques for weather prediction. Some research work in this area is being carried out at Space Application Centre at Ahmedabad.

Under a continuing collaborative programme with the Hydrometeorological Service of the USSR, 52 M-100 meteorological rockets were launched from Thumba during 1973-74 to study the upper winds and temperatures up to an altitude of 90 km.

Meteorological payloads have been developed for launching by Menaka-II rockets. These payloads will be used to determine temperatures and winds in the altitude range of 25-70 km.

SOME FACTS ABOUT INDIAN COFFEE

India's coffee output is registering sizeable improvement year after year. During 1972-73, it was estimated at 91,000 tonnes, according to the Coffee Board, Bangalore. As against the production at 69,000 tonnes in 1971-72, the increase in the following year was nearly 32 per cent. In fact, the production during 1970-71 was the highest ever at 110,231 tonnes. For the year 1973-74, the blossom estimate has been placed at 90,000 tonnes.

Of the total output estimated during 1972-73 (91,000 tonnes), Arabica variety accounts for 62,000 tonnes while the share of Robusta is of the order of 29,000 tonnes. The respective shares of these varieties during 1973-74 have been estimated at 50,000 tonnes and 40,000 tonnes.

Coffee is grown in India in 10 States—Karnataka, Tamil Nadu, Kerala, Andhra, Assam, Orissa, West Bengal, Madhya Pradesh, Maharashtra and Andeman. The Southern States of Karnataka, Tamil Nadu and Kerala account for the large number of large and small holdings at 19,794 estates, 9,278 estates and 21,394 estates respectively while the rest of the states have only 1,195 holdings.

Area-wise also Karnataka tops the list of the states at 85,439 hectares (1971-72) accounting for the bulk of the total area under the crop in India at 139,478 hectares. Next to Karnataka, Kerala is the second important state having 30,249 hectares, followed by Tamil Nadu at 22,905 hectares.

The yield of coffee per hectare during 1971-72 was 495 kgs. In fact, in the preceding year it was at a peak level at 808 kgs.

Alongside increase in output, exports of Indian coffee are also growing from year to year. The exports which were of the order of only Rs. 72.25 million (19,687 tonnes) in 1960-61, rose to Rs. 133.50 million (30,691 tonnes) in 1964-65, Rs. 251 million (32,189 tonnes) in 1970-71 and Rs. 329.30 million (50,855 tonnes) in 1972-73. During the first two quarters of 1973-74 (April-September 1973) these were of the order of Rs. 263.75 million.

GLASS INDUSTRY

A SPOTLIGHT

India's glass industry has been progressively diversifying the production pattern constantly keeping in view the changing requirements of modernity. Growth of glass consuming industries in recent years, has been largely responsible for the development of the industry.

The industry's glass and glassware output during 1972-73 improved to 300,000 tonnes valued at Rs. 500 million from 290,000 tonnes at Rs. 400 million in 1971-72. There are 50 glass manufacturing units engaged in the production of a variety of glass and glassware with a combined installed capacity of 462,500 tonnes. Itemwise, the production during 1973 and 1972 was respectively : bottles and vials (inclusive of semi-automatic) 180,000 tonnes (1973) against 178,600 tonnes (1972); vacuum flasks 5.5 million pieces against 5.3 million pieces and laboratory glassware 2081 tonnes against 1840 tonnes. Sheet glass output was more or less the same as in the preceding year at 19 million square metres. Glass shell output, however, declined to 150 million pieces from its preceding year's level of 176 million pieces.

The present installed capacity of 226,000 tonnes for automatic machine-made bottles is being supplemented by approving additional capacity of 412,000 tonnes in order to meet future requirements. Of the total additional capacity approved, 135,000 tonnes will be implemented with imported plant and machinery while the rest is being established with indigenous plant and equipment. The automatic machines being imported hitherto are now to be manufactured indigenously. A number of schemes for manufacturing these have been approved. A few machines have already been fabricated with imported components.

Likewise, electrocast refractories which are presently being imported from abroad are to be manufactured indigenously; a scheme in this field of manufacture is making rapid progress and is expected to commence production during 1974. The industry is expected to be self-sufficient in this item with the completion of these schemes.

In the area of flat glass, PPG process is currently being used by the only unit in the line. The Fourcault process which is considered to be out-moded today is still being used by other manufacturers in the line. Attempts are being made to convert Four-cault process into PPG process. Letters of intent have been issued to 6 units to produce sheet glass by the latest process. Of these units, five are to adopt PPG process while the remaining unit is to resort to carbon process. When all these schemes are implemented, the present installed capacity of 22 million square metres would increase sharply to 53 million square metres. Besides, one more scheme has been approved for the manufacture of float/plate glass.

Electric lamp sector is also registering sizeable increase in production taking into consideration the growing needs of rural electrification programmes and commissioning of various power projects. The current installed capacity of 170 million pieces of shells is being shared by 7 units in the line but the same is expected to go up to a level of 510 million pieces with the implementation of a number of schemes approved in this line of manufacture.

Alongside production, the industry has made rapid strides in export field also. India's exports of glass and glassware were of the order of Rs. 27.90 million during 1972-73 which registered nearly 100 per cent increase over the export value in the preceding year at Rs. 14.35 million. During 1970-71, the exports were at Rs. 17.30 million and at Rs. 13.30 million in 1969-70.

The industry's export range in glassware covers a number of varieties, such as, bottles and phials, vials for injection, glass containers, glass inners for vacuum flasks, household and restaurant glassware, laboratory glassware, glass ampules, glass tubes for colour comparison, microphone slides, glass bangles, imitation precious and semi-precious stones, fancy and decorative glass smeltwares and articles. In the field of glass exports, window glass, blanks for special lenses, wire glass sheet, plate glass, safety glass, toughened and laminated glass, laminated sheet, glass mirror and many other varieties are active in exports.

Bangladesh, USSR, Nepal, Iran, USA, Afghanistan, Arab, Republic of Egypt, Malaysia, Iraq, Singapore, Mauritius and Indonesia are the significant buyers.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

MANUFACTURING PROCESS FOR PLASTICISERS

National Chemical Laboratory (NCL), Poona, has successfully developed the process for the manufacture of dimethyl/diethyl phthalates (DMP/DEP) which are widely used plasticizers for rubber and cellulose plastics, such as, cellulose acetate, cellulose nitrate and ethyl cellulose. DEP is also a good solvent for these plastics. Both the phthalates find use in solid rocket propellant, perfumery wetting agents and as insect/mosquito repellant.

At present, the chemicals are being manufactured in India by few firms, but in view of the growing plastic industry, there would be a good scope for these plasticizers in the near future.

NCL process consists of reacting phthalic anhydride and alcohol (methyl/ethyl) in the presence of a catalyst. The esterification is carried out and the water of reaction is removed continuously. The crude ester DMP/DEP thus obtained is washed free from acidity and dissolved impurities. It is then bleached, washed and dried.

The process has been developed on a pilot plant scale : 60 kgs. per batch in case of DMP and 40 kgs. per batch for DEP. The yields are about 93—94 per cent. The NCL products conform to the specifications for their use as plasticizers.

Main raw materials required for the manufacture of both of these products are phthalic anhydride, ethanol/methanol and ancillary chemicals including catalysts. All these are available indigenously. The equipment required can also be fabricated indigenously.

For commercialisation of the process, interested parties may contact National Research Development Corporation of India, 61, Ring Road, Lajpat Nagar-III New Delhi.

PESTICIDE FROM GARLIC

A highly effective pesticide has been developed from garlic by the bio-medical group of the Bhabha Atomic Research Centre, Bombay.

Unlike synthetic pesticides, the new pesticide is least hazardous to the ecosystem and insects generally do not develop resistance to it.

Field trials carried out in mosquito-breeding sites in selected localities in Bombay in collaboration with Bombay Municipal Corporation, have shown that garlic oil is 100 per cent effective on several species of mosquitoes.

DEVELOPMENT OF LEAK DETECTOR

An ultrasonic leak detector has been developed by the Defence Electronics Research Laboratory, Hyderabad.

It can detect leaks in pressurised cable plants, large welded structures, hydraulic systems in vehicles, air-conditioning ducts and vacuum system.

Discharge in high voltage electric lines or transformers and defects in pistons and bearings in rotating machinery can also be found out.

NEW TV ANTENNA DEVELOPED

The Central Electronics Engineering Research Institute, (CEERI), Pilani, has developed a single antenna that can feed signals to several television sets in multi-storeyed buildings.

Community antenna, as it is called, will eliminate the need for a separate antenna for every television set in the buildings.

The CEERI antenna is backed by a booster amplifier and it carries with it a distribution board from where connections are given to several sets.

Since the antenna can receive very faint signals, it can be used in areas beyond the zone for ideal television reception.

MANUFACTURING PROCESS FOR ANILINE

The National Chemical Laboratory (NCL), Poona, has developed a process for the production of aniline which is an important intermediate for the manufacture of several dyes, drugs, rubber chemicals and explosives.

India's import trade in aniline totalled Rs. 3 million in 1972-73. In terms of quantity, the imports were 1.25 million kgs. So far, the large scale production of this chemical in India has been established only by M/s. Hindustan Organic Chemicals Ltd., P. O. Rasayani, Dist. Colaba (Maharashtra), based on Japanese technology. Their prooduction capacity is 6,000 tonnes per annum. The demand of aniline is likely to increase considerably in next few years.

NCL has developed a continuous process for aniline, involving vapour phase catalytic reduction of nitrobenzene. Hydrogen and nitrobenzene are passed over the catalyst in a shell and tube oil circulated reactor at elevated temperature and normal pressure. The reaction products are condensed. The organic layer is separated and fractionated to give pure aniline.

The process has been worked out on a pilot plant of 5-6 kgs. per hour capacity. The product meets the required specifications and compares well with the imported one.

Main raw materials required for the production of aniline are nitrobenzene, hydrogen and catalyst. All these are available indigenously. The major items of equipment required are storage tanks, vaporiser shell and tube reactor, condensers, extraction and distillation columns, heat exchanger, hydrogen gas holder and recycle compressor and pumps.

For terms and conditions for commercial release, interested parties may the approach The National Rasearch Development Corporation cf India, 61, Ring Road, Lajpat Nagar-III, New Delhi.

INDO-AUSTRALIAN COMMERCIAL RELATIONS

Having remained static for serval years, Indo-Australian trade has been witnessing remarkable pick-up in recent times. The average annual exports from India to Australia during the five year period ending March 1971 were of the order of Rs. 257 million per annum. In the following two years i.e. 1971-72 and 1972-73, actual exports were Rs. 280 million and Rs. 260 million. The share of the Australian market in India's global exports fell from 2.3 percent in 1966-67 to 1.8 per cent in 1971-72 and 1.3 per cent in 1972-73. In 1973-74, however, there was a remarkable increase in exports which totalled Rs. 231 million in the first seven months of the year, accounting for 1.8 per cent of India's global exports during the period against Rs. 146 million in the corresponding period of 1972-73 (1.4 per cent of global exports).

Australia's share in Indian imports has also been on the rise in recent years. For 1971-72, the import bill amounted to Rs. 299 million while it was Rs. 324 million in 1972-73. In the first half of 1973-74, the import value was as much as Rs. 227 million.

India's exports to Australia comprise of Jute manufactures, tea, cotton fabrics, cashew kernels, fish and fish preparations, machinery, woollen carpets and rugs, iron and steel, leather, tanned hides and skins, footwear and clothing. India's imports from Australia included wool, non-ferrous metals, wheat, machinery, milk powder, iron and steel and transport equipment.

Jute goods form about 30 per cent (Rs. 75 million in 1972-73) of India's total exports to Australia. India's share in total Australian purchases of jute goods is around 36 per cent. The important types imported into Australia are hessian cloth, carpet backing cloth from India, wool packs from Japan and Taiwan, sacking bags from Bangladesh and second hand bags from Japan.

The annual Australian requirements of tea seem to be around 29 million kgs. India's share in the tea market is around 11 per cent (Rs. 21 million in 1972-73). Sri Lanka is the largest supplier of tea with a share of 45 per cent. Imports of tea from African countries and Papua are on the increase. However, total demand for tea in Australia seems to be gradually going down while that for coffee is on the increase.

Indian cotton textiles are in good demand in Australia and form about 9 per cent (Rs. 23 million in 1972-73) of India's total exports. Almost all varieties of Indian cotton textiles are exported but generally the demand is for larger widths. India's share in the Australian textiles market is about 1 per cent only. Japan, Hong Kong and China are other important suppliers. The recent marginal decline in Indian exports of cotton textiles has, however been amply made up by a spurt in exports of readymade garments. Exports of readymade garments in 1972-73 at Rs. 14 million were about three times of the level in the previous year and four times the figure in 1970-71. As the price realisation per unit in case of readymade clothes is higher, the trend is to be welcomed. Exports of readymade garments which formed about 6 per cent of total Indian exports to Australia in 1972-73 are expected to become more prominent in the coming years.

Apart from tea, the other important food items to be exported from India to Australia are marine products—mostly prawns and cashewnuts. Exports of prawns to Australia which started only in 1969-70 have been steadily on the increase although still they form only 4 per cent of Australian total imports and 6 per cent (Rs. 15 million in 1972-73) of India's total exports to Australia. In cashew kernels, India is the main supplier (about 50 per cent), exporting worth Rs. 13 million. Australian imports of cashewnuts seem to be slowly decreasing probably due to competition from other edible nuts.

Exports of engineering goods from India to Australia have been increasing steadily. In 1972-73, these formed 8 per cent (Rs. 19 million of India's total exports against 6 per cent in the previous year. The items exported under this major head cover a wide spectrum of goods, such as, hand tools, files, pliers, vices, drill bits, knives and cutting blades, paper knives, utensils, kitchen and tableware, metal statues, bells, machinery items like automatic data processing machines, card punching machines, boring machines, shaft grinding machines, capstan turret lathes, knitting machines, electrotyping and stereotyping machinery, furnace burners, pumps, foot operated inflators, ball and roller bearings, reduction boxes, gaskets, electric motors, A.C. generators, circuit breakers, switch gear, time delay equipment, wires insulated and conductors, telephones, telegraph equipment, loudspeakers and their components, dynamos, motor starting equipment, electro-magnetic clutches, braking equipment, shock absorbers, scooters, electric lamps and fittings, tables and chairs.

The wide range of goods at present being exported indicate a large potential market for Indian engineering products, many of which are labour intensive.

Precious stones mainly diamonds and emeralds are exported in cut shape. This is another item exports of which have expanded in the recent years. Exports in 1972-73 which accounted for about 4 per cent (Rs. 9 million of total Indian exports to Australia were about 80 per cent higher than the level in the previous year.

The manufactured items in the chemicals group to be exported to Australia are sulphonamides, enzymes caustic potash, potassium permanganate, oxytetracycline, perfumeries and soaps. Sport goods specially cricket balls, cricket bats, squash and tennis rackets, hockey sticks, leather footballs are also exported in considerable quantity.

Exports during the year 1973-74 have recorded a very appreciable improvement, about 60 per cent over the last year. If the trend continues exports during 1973-74 may aggregate Rs. 400 million.

Major items of import from Australia into India are wheat, raw wool, milk powder, zinc, machinery and transport equipment.

Australia introduced in April 1966 a scheme of Tariff Preferences for Less Developed countries. The system provides preferences for developing countries in a range of manufactured and semi-manufactured products. About 163 items are covered by this scheme. But only 20 items—mostly traditional—are benefitted by the scheme. It is imperative that the scheme is to be soon liberalised.

As members of the ECAFE, both India and Australia have similar aspirations for economic development and have a record of mutual cooperation aimed at this objective.

Australia is already collaborating with Indian industry for manufacture in India of diamond drilling bits, thin walled bearing, furnances, cycle tyres and tubes, machine tools, plastic battery separaters, taxi-meters, slaughter house equipment, conveyors, welding electrodes, chemicals having plastic base, razor blades, food machinery equipment, crankshaft grinder and printing machinery.

There is scope for setting up joint ventures by Australia and India in either country or third countries. Some of the fields where Indo-Australian cooperation may be of advantage are dry batteries, machine tools, small cutting tools, auto ancillaries, electric fans, clothing, ready-made garments and hosiery, woollen carpets, hard board; artisan tools, window and cabinet hardwares, sewing machines and bread making plants.

That there has been a rapid diversification of Indian exports to Australia can be gathered from the emerging demand in that country for several of India's

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engineering products. In the 6th International Engineering Exhibition held in Sydney (1972) where the Engineering Export Promotion Council, (Calcutta) participated, many of Indian exhibits raised Australian curiosity. These exhibits included machine tools, hand tools and cutting tools, diesel engines and pumps, refrigerators, sewing machines, electric fans, scooters, P. A. equipment, wire ropes, electric cables, steel pipes and tubes, scientific instruments, electric motors and steel shots. Indian participation in the fair had resulted in firm orders and quite a few trade enquiries.

Australia is a fast developing market with imports growing at an annual rate of A$ 300 million which is ten times the present exports from India t [illegible] This is an ample indication of the assured fu[illegible]r Indo - Australian trade promotion. ☐

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EXPORT TRADE IN ELECTRONICS

In the context of India's growing ability to supply electronic products to the world markets, the contribution made by M/s. Bharat Electronics Limited, Bangalore, has been indeed significant. The exports of the company during 1972-73 amounted to Rs. 10.6 million against the previous year's figure of merely Rs. 0.6 million.

The company has also endeavoured to save the outgo of foreign exchange by increasing the indigenous content in the equipment and components that it manufactures. It has succeeded in bringing down the foreign exchange content in the value of its completed production from 35 per cent in 1968-69 to 24 per cent in 1972-73.

The firm's production value which stood at Rs. 39.6 million in 1963-64 was progressively stepped up to reach the level of Rs. 391 million during 1972-73.

Its manufacturing range includes communication equipment for use by the Defence Forces and other departments like All India Radio, Meteorological Department, Posts and Telegraphs as also components for the entertainment industry. While the production value has been improving year after year, it has succeeded in introducing newer items in its manufacturing activity. During 1972-73, the firm supplied T.V. transmitters and T.V. studio equipment required for the proposed stations at Madras, Calcutta, Kanpur and Lucknow. Another new item taken up for production by the firm was the radar for frigates, the first of which was delivered to M/s. Mazagon Dock Limited in early 1973.

There are eight Equipment Development Groups in the company now. In the HF and VHF range, they have undertaken the development of a new generation of communication equipment to replace those used in the Indian army. Of these, development of over a dozen types of completed equipment are undergoing trials. Besides, the firm has developed communication system for units operating self-propelled guns and a solid state gun control equipment.

A four channel airborne BHF set for use in light aircraft has also been completed. In the UHF range, the company has developed a system capable of taking up 120 channels to be used in radio relays.

M/s. BEL have also completed the development work of peripheral equipment for computers like the paper tape reader and paper tape punch. It has already completed the development job of cross bar and switch units required for TV Station set-ups. On the components side, the firm's development activities continued in the field of electron tubes, semi-conductors and passive components. Development work of three types of Germanium Semi-conductors, five types of Silicon Semi-conductors and 15 types of Hybrid Micro-circuits was also completed.

TELEPRINTERS EARN FOREIGN EXCHANGE

Among telecommunication equipment successfully exported to the world markets from modern India, teleprinters deserve special mention. M/s. Hindustan Teleprinters Limited, Madras, have an appreciable record of not only saving valuable foreign exchange through their import substitution efforts but also directly securing foreign exchange through their export trade.

The company's export value amounted to Rs. 724,000 during 1972-73 through their supplies to various countries, prominent among them being Nepal (Rs. 292,000), Mauritius (Rs. 214,000) and Lebanon (Rs. 124,000).

The company has succeeded in effecting certain modifications in the components which resulted in cost reduction of Rs. 224,000 and foreign exchange saving of Rs. 90,000 during the year.

It manufactured 6042 units of teleprinter machines during the year as against 4780 units in the year that preceded. As a result of sustained efforts at import substitution, the number of components required to be imported has been reduced by them to the barest minimum. The import content at the end of 1972-73 worked out to hardly 5.7 per cent of the cost of production—2.5 per cent in respect of components and 3.2 per cent in respect of raw materials.

Incorporated in 1960, the company has been manufacturing teleprinters and ancillary equipment with the collaboration of an Italian firm. Its sales and service charges during 1972-73 rose to Rs. 42 million from Rs. 33.5 million in 1971-72, representing an increase of 26 per cent.

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AUTOMOBILES ON EXPORT FRONT

Automobile industry constitutes a significant sector in the context of India's engineering product exports. The foreign exchange earning of India-made road motor vehicles improved to about Rs. 160 million in 1972-73 from Rs. 150 million in the preceding year.

During the first seven months of 1973-74 (April-October, 1973), these exports brought in Rs. 58 million. Arab Republic of Egypt, Democratic Republic of Korea, Muscat, Kuwait, Sudan, Thailand, Yugoslavia, Bahrein Islands, Qatar, Dubai, Singapore, Afghanistan, Iraq, Iran, Indonesia, Malawi and Uganda were among the leading destinations for such overseas supplies.

Contributing to the export effort in the line, M/s. Mahindra and Mahindra, Gateway Building, Apollo Bunder, Bombay, whose production profile includes automobiles, mainly jeeps, have succeeded in doubling their exports to nearly Rs. 23.30 million in the year ending October 1973, from barely Rs. 11.80 million in the preceding year.

Creditably, alongwith the progress achieved in the export field, the Bombay firm was able to step up production of vehicles to 14216 numbers from 13504 numbers in the previous year (ending October 1972).

The company is creating unitised operations in the automotive division to ensure better utilisation of available resources. Separate units are being formed for jeep assembly, truck assembly, foundry, engine and transmission and axles. It also proposes to expand its Instruments Division to meet the growing demand in this sector. A factory site has already been selected and construction is expected to be completed by the middle of 1975.

India's automobile industry offers a broad range of vehicles including trucks, buses, lorries, motor cars, jeeps, motor cycles, scooters, tractors, breakdown lorries and a complete range of accessories and parts. Starting with mere assembly operation of imported vehicles, the industry has now expanded to undertake manufacture of different types of vehicles, so as to cope up with the rapidly changing demands of customers at home and abroad. Production of the industry is also rising year after year. The output of jeeps improved to 13,070 numbers in 1973 from 12,590 numbers in 1972 while production of commercial vehicles rose to about 42,400 numbers from 37,466 numbers. Similarly, the turnout of scooters, motor cycles and mopeds was up at 150,903 numbers in 1973 compared to 133,500 numbers in the preceding year.

KEEN OVERSEAS DEMAND FOR INDIAN TELEPHONE EQUIPMENT

High degree of sophistication of India-manufactured telephones and ancillaries has created a widespread demand for these items abroad. M/s. Indian Telephone Industries (ITI), Bangalore, the sole unit in India engaged in the manufacture of these items secured export orders valued at over Rs. 1.65 million during the first nine months of 1973-74 (April-December 1973).

During the period, export orders for transmission telecommunication equipment and telephone spares were secured from Nepal, Australia, Belgium, Libya, Kenya, Malaysia, Bhutan, Singapore, South Yemen, Tanzania, USSR, Afghanistan, Sikkim and Sri Lanka. The export range included line extensible private automatic exchange, auto desk telephones, magneto desk telephones, telephone exchange equipment, manual telephone exchange equipment, switching telephones and a number of ancillaries and spare parts.

As at the end of 1973, this public sector undertaking had export orders on hand worth Rs. 17.50 million to be executed during 1973-74 and 1974-75. For the year 1973-74, ITI placed their export target at Rs. 7.5 million. Taking into consideration their order book the company hopes to achieve sizeable export earning, estimated at Rs. 5.20 million during 1973-74. In 1972-73, ITI's exports totalled Rs. 4.12 million as against Rs. 3.2 million in the preceding year. Australia, Afghanistan, Belgium, Brazil, Burma, Canada, Sri Lanka, Arab Republic of Egypt, Greece, Guinea, Jordan, Kenya, Sikkim, Tanzania, Uganda, UK and Zambia were the principal importers.

ITI have to their credit the bagging of even turnkey assignments in the face of keen international competition. For instance, they won a contract from Jordan for the supply, installation and commissioning of a 1000 line automatic telephone exchange in that country at a value of Rs. 2 million. Apart from this, they also received repeat orders worth Rs. 6.5 million for supply and installation of 11 automatic exchange extensions in East Africa including those in Dar-e-Salaam and Nairobi.

In the period under review of 1973-74, ITI's value of production amounted to Rs. 205.85 million. During 1972-73, their total production comprised of 265,255 instruments of all types, 128,000 lines of strowger exchange equipment, 95,000 lines of crossbar exchange equipment and transmission equipment. ITI has 3 manufacturing units located at Bangalore, Naini (near Allahabad) and Kashmir and two more are to be established at Rae Barelli in UP and in Kerala.

With the completion of their 25 years of operation in 1972-73, their total turnover exceeded the Rs. 250 million mark while the exports were effected to as many as 45 countries including the sophisticated economies, like United Kingdom and Australia. Besides achieving significant strides in the fields of production and export, ITI have developed quite a few new items with a view to keep themselves abreast of the latest technological developments in the line abroad. Among the new product ranges developed by them are multiplexing equipment, microwave equipment for satellite earth stations (which make long distance communications possible), specialised equipment for railways and defence, and the latest electronic exchange.

Indian telecommunication apparatus are in steady demand abroad. During 1972-73, the export trend was more or less the same as in the preceding year at Rs. 29.90 million. Even during the first seven months of 1973-74, the exports maintained a level equivalent to that attained in the corresponding period of the preceding year. The exports during the two periods were Rs. 17.85 million and Rs. 17.45 million.

A wide variety of telecommunication apparatus, such as, domestic radio receivers, transister sets, radio phonographs, telegraph apparatus and parts, telephone apparatus and parts, microphones, loudspeakers, radio loudspeakers, amplifiers, microphone parts, radio broadcasting apparatus and television cameras, wireless reception with transmitting apparatus and parts, television transmission apparatus and parts find their way to a large number of markets overseas. Libya, Tanzania Republic, Nigeria, Iran, USSR, Bangladesh, Kenya and Australia are the leading buyers.

WIRE ROPES ACTIVE IN EXPORT TRADE

Besides catering to the home demand, the wire rope industry in India is active in the export field also. During 1972-73, the industry earned foreign exchange to the tune of Rs. 16.94 million. Even for April-October (1973-74), the export figure was about Rs. 13.20 million.

Of the total export earning in 1972-73, the share of black wire ropes made of iron or steel was Rs. 6 million (1980 tonnes), while galvanised wire ropes fetched Rs. 10 million (2930 tonnes). The contribution of other varieties of wires was, howerer, not significant.

During the year, Yugoslavia was the foremost importer of Indian supplies of black wire ropes at a value of about Rs. 2 million. Thailand, Bangladesh, Iraq, Malaysia, Arab Republic of Egypt, Kuwait, USA, Turkey, Ecuador, Dubai, Poland and Qatar were among the other prominent buyers. USSR with an intake worth Rs. 3.85 million topped the list of buying countries for galvanised wire, followed by Yugoslavia at Rs. 2.85 million. Among other customers, Democratic Republic of Korea, Iran, Poland, Hong Kong, Republic of Korea, Qatar, Singapore and Switzerland were prominent.

M/s. Rookmani Private Ltd., 1513, Prasad Chambers (Swadeshi Mills Compound), Bombay, have contributed appreciably to the total export value (1972-73) of wire ropes. Their exports of wire ropes during the year were valued at about Rs. 2 20 million compared to Rs. 1.98 million in 1971-72 and only Rs. 1.24 million in the preceding year. These supplies were directed mainly to Yugoslavia and Switzerland.

Besides wire-ropes, the Bombay firm is engaged in export of other products as well. For instance, in 1972-73, their export range included optical frames to Switzerland, rayon textiles and tennis rackets to Yugoslavia and plaster of paris to Bahrein Islands. Their total exports for the year amounted to a little more than Rs. 2.80 million, both in 1972-73 and 1971-72, while these were limited to only Rs. 0.85 million in 1970-71.

Listed among priority industries, the wire rope industry in India, is spread over 9 units with an installed capacity of 44,340 tonnes a year. Actual production in 1972 was of the order of 20,000 tonnes. Indigenous production of wire ropes is currently being used in mines upto depth of 350 metres. Of the two major raw materials required for the industry, namely high carbon rods and zinc, 60 per cent and 30 per cent of the total requirements are available from indigenous sources.

EXPORT PERFORMANCE AND POTENTIAL

ECONOMIC CO-OPERATION WITH IRAN

At the invitation of Imperial Government of Iran, the Prime Minister of India, Mrs. Indira Gandhi, has recently concluded an offical visit to that country. An Indo-Iranian Joint Communique which was issued at the conclusion of mutual discussions has outlined several new areas of commercial and economic collaboration between the two countries.

In the course of the discussions, the Prime Minister of India touched upon the recent tripartite agreement between Pakistan, Bangladesh and India and expressed the view that the agreement would lead to normalisation of trade economic and other relations between India and Pakistan. The discussions also reviewed the situation in West Asia and the current economic position in the world. The need for initiative to mitigate the impact of recent rise in prices of commodities on the developing countries was particularly emphasised. The Prime Minister of India welcomed the initiative taken by His Imperial Majesty of Iran for the establishment of international neutral fund for the purpose.

Both the parties expressed satisfaction over the rapidly expanding economic and commercial relations between the two countries. They agreed that the bilateral collaboration and exchanges could be further strengthened to the mutual benefit of the two countries. It was decided to increase the production capacity of the Kudremukh iron ore project in India to 7.5 million tonnes per year for use in Iran and they also agreed to undertake a joint study to set up an alumina plant with an annual capacity of 300,000 tonnes in which Iran could have first option. Iran agreed to extend soft loans for the implementation of these projects under mutually agreed terms.

It was also decided to form a joint shipping line with Iranian financial assistance with an initial capacity of 0.5 million tonnes to operate between the two countries as also ports in the Far East and other routes agreed upon. Both India and Iran have also agreed to maximise the capacity of Indian industries to meet their requirements. Priority would be given to the production of cement, sugar, billets and other steel products, paper, newsprint and chemicals. Contacts will also be made between the atomic energy organisations in the two countries to establish a basis for cooperation in the field.

Indo-Iranian two-way trade totalled Rs. 1465 million during 1972-73 of which Indian supplies amounted to Rs. 248 million while her imports from Iran aggregated Rs. 1215 million. Major products of India's import from Iran have been crude petroleum and petroleum products, sulphur and dry fruits. The principal commodities exported by India to Iran have been jute manufactures, tea, non-ferrous metals, metal manufactures, transport equipment, iron and steel, machinery, spices, paper and paperboard. Incidentally, Iran is the prominent buyer of India's manufactured products.

Already four joint ventures with Indian assistance are active in Iran. M/s. Mahindra and Mahindra Bombay has established a joint venture for the production of spare parts and automobile components in Iran. Another Joint unit sponsored by M/s. Indian Aluminium Cables Limited, New Delhi is to soon go on production stream for the manufacture of malleable castings. There is another proposal from M/s. South India Automobile Corporation, Madras for a repair and service project in Iran. M/s. Atlas Cycle Industries, Sonepat, has extended technical know-how for the manufacture of bicycles in that country.

While there is further scope for Indo-Iranian joint ventures in a wide range of manufactures (including handtools, diesel engines, automobile components, railway ancillary equipment, spares and parts of textile machinery, petroleum refining, petrochemicals and textile auxilaries), there is scope for consultancy services from India in respect of town planning, rural electrification and transport. In this context mention could be made of Indian technical assistance for the establishment of Shiraz Oil Refinery in Iran.

The joint communique issued at the conclusion of the visit of India's Prime Minister to Iran, pin-pointed specific areas of economic collaboration and it is expected that the visit of Mrs. Indira Gandhi to that country will pave way for expanding the scope of economic and commercial collaboration between the two countries.

COMPULSORY QUALITY CONTROL FOR FROG LEG EXPORTS

While Japan, China (Taiwan), Cuba and Yugoslavia have been the principal exporters of frozen frog legs to the world markets, India has also emerged in recent years as one of the major suppliers of this item To ensure that only quality supplies are made to export markets, the Government of India laid down stringent quality standards for frozen frog legs and a scheme for compulsory quality control and pre-shipment inspection has been in force since March, 1966.

U.S.A. has been the prime importer of frog meat from India; it bought worth Rs. 17 million(1400 tonnes) during 1972-73 out of the total export value of about Rs. 30 million (2275 tonnes); France, Belgium, Japan and Netherlands were the other notable buyers for frog meat from India in that year.

The export inspection procedures adopted in India for the product had been exactly the same as used by the Food and Drug Administration of the U. S. A. A few months back, the Government of U. S. A. revised their inspection procedures following a scare spread in that country about the contamination of flesh of poultry meat, dairy products and so on by an harmful pathogenic bacteria "Salmonela". On the basis of the new inspection procedures, U.S.A. has rejected substantial quantity of frog legs supplied from India, althougth there were practically no rejections earlier so long as the export inspection rules in India and those of U. S. A. were the same.

The Government of India have now come to an understanding with the Food & Drug Administration of U. S. A. that the rejected consignments would be re-processed in U. S. A. and if after re-processing these consignments conform to the new inspection procedures of that country, they would be allowed to be moved into their markets.

The rejected consignments, under the Agreement, are to be be given treatment by submerging the product in water containing 200 parts per million of chlorine for a brief duration, say 2 to 5 minutes and immediately thereafter, the material would be washed in running ordinary potable water containing 50 parts of chlorine.

While the Agreement between the two countries was in regard to the consignments rejected by U.S.A., the export inspection agencies in India have now introduced the revised system of inspection being followed by the Food and Drug Administration of U. S. A. and it is expected that the consignments going hereafter will not face the type of rejection as during the last few months.

In the interest of conserving the frog wealth of the country, export of live frogs is allowed only on merit under an export licence.

The Government of India have also banned the export of frog legs of counts smaller than 80 per kg. (count is number of pairs of frog legs per kg). Also the processing of frog legs during mid-June and mid-August which is the breeding season for frogs in India, is banned.

Japan is the world's leading producer of frogs. Although several species of edible frogs are available in India, the most common frog caught and supplied overseas is the bullfrog.

INDO-EGYPTIAN TRADE TRENDS

In the course of the visit of India's Commerce Minister to the Arab Republic of Egypt in March this year, several subjects of mutual interest were discussed with the Egyptian authorities with a view to furthering the two-way trade turn over. Besides the need to develop measures to improve mutual trade flows, the topics that came up for discussion included the possibility of diversifying commercial exchanges, India's participation in Egypt's programme of reconstruction and scope for promoting joint ventures.

Trade between the two countries is currently governed by the bilateral trade agreement concluded in 1953 on the principle of 'most favoured nation'. The Agreement provides for formulating trade arrangements year after year. These arrangements are to ensure balanced trade between the two countries on the basis of a non-convertible special account maintained by the State Bank of India. The current trade arrangement covers the period during October 1973 and September 1974.

Indian exports to ARE amounted to Rs. 317 million in 1972-73 as against Rs. 23 million in 1971-72. Her imports from ARE were of he order of Rs. 289 million and Rs. 332 million respectively in these years.

India's major import from Egypt has been cotton. Some quantities of rice and rock phosphate are also imported. In return India has been supplying a wide variety of products including jute manufactures, tea machinery, transport equipment and other engineering goods as well as cotton yarn.

In 1972-73, the value of Indian import of raw cotton (excluding linters and sweepings) from ARE, amounted to Rs. 255.40 million, while her imports of rice was of the order of Rs. 27.60 million. In the same year, the contribution of major products in India's export trade to Egypt was as follows : Jute manufactures (Rs. 127 million), tea and mate (Rs. 85.6 million), machinery other than electric (Rs. 22 million), transport equipment (Rs. 17 million), cotton yarn & thread (Rs. 16 million), iron and steel (Rs. 7 million), metal manufactures (Rs. 7 million), electric machinery, apparatus and appliances (Rs. 6 million), paper and manufactures (Rs. 5 million), dyeing tanning and colouring materials (Rs. 4.5 million), medical and pharmaceutical products (Rs. 2.5 million) and so on.

India and Arab Republic of Egypt are members of a tripartite agreement for trade expansion and economic cooperation with Yugoslavia as the third member. The Tripartite Agreement came into force in 1968 for an initial period of 5 years. Its validity has since been extended for a further period of 5 years until March, 1978. Conceived as a unique experiment by the three developing countries to strengthen mutual economic development and trade promotion, the Agreement is open for accession by any developing country of the 'Group of 77' and contains a 'common list' of products with respect to which each participating State has agreed to accord tariff concessions when imported from the other two countries.

INDIA'S TRADE RELATIONS WITH PHILIPPINES

Trade relations between India and Philippines are governed by a Trade Agreement which was signed as early as 1968. Under the Agreement, the two countries agreed to facilitate exchange of goods and also expand and diversify the two-way trade pattern.

India's exports to Philippines during 1972-73 were of the order of Rs. 14.9 million as against Rs. 14.2 million in the corresponding period of 1971-72. The main items of exports from India to Philippines have been metals—iron and steel and aluminium Rs. 3 million (against Rs. 0.6 million in 1971-72); machinery other than electric Rs. 3.1 million (Rs. 3.8 million); manufactures of metals Rs. 2 million (Rs. 2.9 million); medicinal and pharmaceutical products Rs. 1.6 million (Rs. 1 million); transport equipment Rs. 0.8 million (Rs. 1.7 million); machinery electric Rs. 0.2 million (Rs. 0.5 million); non-metallic minerals manufactures Rs. 0.5 million (Rs. 0.6 million) and crude vegetable materials Rs. 1.1 million (Rs. 0.8 million).

India's imports from Philippines during 1972-73 aggregated to Rs. 2.3 million as compared to Rs. 3 million during 1971-72. The main items of imports were manila fibre Rs. 2.3 million (Rs. 1 million).

Philippines has been resorting to 'Rolling Four-year Development Plans. Currently, the economy is passing through the 1972-76 plan. These Rolling plans aim at building infrastructure, development of primary and industrial sectors, development of agriculture and expansion and diversification of exports. Obviously the plans necessitate huge imports of plant, machinery, equipment and building hardware for accomplishment of their projects in railways, roadways and telecommunication. In this context, India's exports, particularly of engineering items, to Philippines could be stepped up.

Other items which have possibilities of exports to Philippines from India are : Educational and scientific instruments and appliances, instruments used in irrigation and powerfields as telecommunication equipment, trucks and parts, agricultural machinery and implements. Besides, there is potential for export to Philippines from India of items such as : textile machinery and spare parts; complete cold storage and ice plants; valves of various types; motor vehicles and jeep components and transmission beltings, hospital equipment and surgical instruments; surveying instruments; office and business machines.

The Bureau of Investment of the Philippines draws plans to regulate investments and to determine incentives. In the current Plan, initially only pioneer industries are open for investment to foreign nationals, who can have a maximum of 40 per cent participation in capital structure. Among the 'Pioneer' industries listed in the Plan, important ones of interest to India are : industries for manufacture of specified chemicals including antibiotics; rubber belts; steel based industries; hand tools, bandsaw shapers, electric drills, lathes, drill presses, electric grinders, industrial valves etc., steam-boilers, high H. I. diesel engines, electric meters and power transformers. Already a joint venture from India is active in Philippines for the manufacture of diesel engines. M/s. Kirloskar Oil Engines Ltd., Poona, the Indian party are stated to have so far exported machinery worth Rs. 1.8 million for the joint ventnre.

At present, trade between India and Philippines constitutes only a fraction of their global trade. There is ample scope for expanding and diversifying mutual trade particularly in respect of India's growing ability to supply a wide range of non-traditional manufactures.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

ON PUBLIC SECTOR ENTERPRISES IN INDIA

The total investment in equity capital and long term loans in the Central Government undertakings (other than departmental projects) amounted to Rs. 55,710 million at the end of 1972-73 as against Rs. 50,520 million at the end of the preceding year, Rs. 24,150 at the end of 1965-66 (end of the Third Five Year Plan), Rs. 810 million at the commencement of the Second Five Year Plan and Rs. 290 million at the commencement of the First Five Year Plan. By the end of March 1973, there were 113 Central Government undertakings.

The total investment at the end of 1972 73 was of the order of Rs. 18,400 million in steel industry, Rs. 6665 million in enterprises manufacturing minerals and metals, Rs. 6574 million in heavy engineering, Rs. 6491 million in chemicals and pharmaceuticals, Rs. 3783 million in petroleum, Rs. 1897 million in transportation equipment, Rs. 1225 million in medium and light engineering industries, Rs. 484 million in consumer goods industries and Rs. 80 million in agro-based entreprises.

The largest investment is in respect of M/s. Hindustan Steel Limited, which is the biggest company not only in the public sector, but also in the country as a whole accounting for a total investment of Rs. 10300 million.

In addition, investment (1972-73) in undertakings under construction was of the order of Rs. 1128 million.

The total export efforts of the munufacturing, trading and marketing entreprises in public sector amounted to Rs. 3755.70 million in 1972-73 as against Rs. 2565.40 million in 1971-72. In addition to the actual exports of commodities, foreign exchange was also earned from the services rendered by the public sector undertakings to the tune of Rs. 1246.50 million in 1972-73 as compared to Rs. 1024.70 million in 1971-72. Of the foreign exchange earned from services rendered by the public sector undertakings, the air companies earned Rs. 769.40 million, shipping companies Rs. 444.60 million and aircraft and ship repairing enterprises earned Rs. 23.50 million during 1972-73.

The enterprises engaged in production lines succeeded in exporting worth Rs. 741.20 million during 1972-73. Of this, the enterprises producing capital goods exported worth Rs. 47 million and the exported products profile included boilers, switchgears spares, electronic communication equipment and electronic components, teleprinters and accessories, telephone exchange equipment, machine tools and wrist watches, hand tools, aircraft components and earth moving equipment.

The enterprises producing basic materials contributed nearly Rs. 690 million to the country's export trade during 1972-73. The major contribution came from the export of mineral ores by M/s. National Mineral Development Corporation, various iron and steel products from M/s. Hindustan Steel Limited, petroleum products by M/s. Indian Oil Corporation Ltd., pig iron from M/s. Bokaro Steel Limited and rare earth chloride and trisodium phosphate by M/s. Indian Rare-Earths Ltd.

Foreign exchange earnings other than through exports were contributed by M/s. Air India and M/s. Indian Airlines, M/s. Shipping Corporation of India Limited., Air India Charters Ltd., M/s. Moghul Lines Ltd. and M/s. Mazagaon Docks.

The value of exports canalised through trading and marketing services amounted to Rs. 3014 million during 1972-73 as compared to Rs. 1907 million in 1971-72 and Rs. 1797 million in the year that preceded. The contribution of the State Trading Corporation of India Limited was the maximum (Rs. 1701 million in 1972-73), followed by that of the Minerals and Metals Trading Corporation of India Limited (Rs. 1044 million), while M/s. Projects and Equipment Corporation contributed Rs. 100 million to the export trade, according to the Annual Report on the Working of Industrial and Commercial Undertakings of the Central Government (1972-73), recently published by the Bureau of Public Enterprises (Ministry of Finance).

SPOTLIGHT ON FERTILISER INDUSTRY IN INDIA

India's total installed capacity of fertilizers is of the order of 1,938,000 tonnes in terms of nitrogen (N) and 560,000 tonnes in terms of P_2O_5 (Phosphate). Of this, the capacity installed in the public sector is 1,128,000 tonnes of N and 202,000 tonnes of P_2O_5.

In addition to the capacity already installed in the country, projects under implementation are expected to create further capacity of 4,329,000 tonnes of N and 119,000 tonnes of P_2O_5.

The Fertilizer Corporation of India (FCI) which is a public sector undertaking has six operating units, including Durgapur which commenced trial production recently. These are the projects at Sindri, Nangal, Trombay, Gorakhpur, Namrup and Durgapur. The capacity developed by the Corporation so far is 537,800 tonnes of nitrogen and 36,000 tonnes of P_2O_5. In addition, the Corporation is implementing a large programme of expansion of fertilizer caracity. The details of the projects in different stages of implementation are as follows :—Barauni : 151,800 tonnes of N; Namrup Expansion 151,800 tonnes of N; Haldia 151,000 tonnes of N and 75,000 tonnes of P_2O_5; Nangal Expansion 151,800 tonnes of N; Talcher 227,700 tonnes in N; Ramagundam 227,700 tonnes of N; Korba 227,700 tonnes of N; Sindri Modernisation and Rationalisation 129,000 tonnes of N and 150,000 tonnes of P_2O_5; Gorakhpur Expansion 51,000 tonnes N and Trombay Debottlenecking Scheme 32,000 tonnes of N and 18,000 tonnes of P_2O_5. With the implementation of all the projects the Corporation is to develop a total capacity of 2040,200 tonnes of nitrogen and 279,000 tonnes of P_2O_5.

Apart from FCI, M/s. Madras Fertilizers Corporation Limited at Manali near Madras is another important fertilizer producer in India. It is a joint verture in which the Government of India own 51 per cent of the equity capital while the remaining is equally shared between an American and an Iranian firm. This plant has an annual capacity of 164,000 tonnes of N and 85,000 tonnes of phosphates. During 1972-73, its actual output was 105,000 tonnes of N and 53,500 tonnes of P_2O_5.

M/s. Fertilizers and Chemicals Travancore Limited (FACT), Udyogamandal, (Kerala) is a public sector undertaking in which the Government of India now hold about 93 per cent of the share capital. Besides its operating units at Udyogamandal and Cochin (Phase I), FACT is also implementing another project in Cochin (Phase II). The Udyogamandal unit has a capacity of 82,000 tonnes of N and 35,000 tonnes of P_2O_5 per year; it produces ammonium sulphate, ammonium phosphate, ammonium chloride and superphosphate. Its production in the first ten months of 1973-74 was 32,900 tonnes of N and 19,185 tonnes of P_2O_5 as compared to 32,950 tonnes of N and 13,967 tonnes of P_2O_5 in 1972-73. The Cochin (Phase I) plant has a designed capacity of 330,000 tonnes of urea per annum which is now operating on trial runs and has attained nearly 60 per cent of capacity. Cochin (Phase II) Project is designed to produce 485,000 tonnes of NPK complex fertilizers and 7500 tonnes of cryolite per year. It is being implemented with the assistance of World Bank and is expected to be completed in 1975.

FACT has an ancillary organistion viz. FACT Engineering and Designs Organistaion (FEDO) which undertakes engineering and contract jobs in different parts of the country. It has already secured a contract worth Rs. 120 million against international competition for the design, supply, construction and commissioning of the Sulphuric Acid Plant, a phoshoric acid plant and a triple superphosphate plant for the Khetri Acidcum-Fertilizer Project.

M/s. Pyrites, Phosphates and Chemicals Limited is engaged in the exploitation of pyrite deposits at Amjhore in Bihar and Saladipura in Rajasthan as as well mining of rock phosphate deposits at Maldeota in U. P. The first phase of the mining project at Amjhore for production of 400 tonnes of pyrites ore per day was completed in 1968. During 1972-73, 40,175 tonnes of pyrites were produced. The Saladipura deposit is stated to sustain a production of 2,000 tonnes of sulphuric acid per day (0.6 million tonnes per annum).

Rock phosphate of 18 to 25 per cent P_2O_5 content is being mined at Phosphate Mining Exploitation Project, Maldeota (U. P.). In the first three quarters of 1973-74 (December 1973), 3040 tonnes of phosphate was produced.

While the above analysis provides a brief picture of the functioning of the fertilizer units in India's public sector, the private industry has also an important role to play in this line of production. Fertilizers being in core sector, private entrepreneurs in the country are also allowed to set up fertilizer plants. The major units that have already been set up in the private sector and are under production are at Kota (Rajasthan), Kanpur (U.P.), Visakhapatnam (A.P.), Baroda (Gujarat) and Goa. These units have a capacity of 731,000 tonnes of N and 134,000 tonnes of P_2O_5 per annum. The Baroda unit, M/s. Gujarat State

Fertilizers Corporation has a capacity of 166,000 tonnes of N and 19,000 tonnes of P_2O_5 and the two major products produced are urea and DAP. M/s. Indian Explosives Limited, Kanpur has a capacity of 200,000 tonnes of N per year and it produces ammonia and urea. M/s. Shriram Chemicals, Kota has a capacity of 110,000 tonnes of N, mainly producing urea. M/s. Coromandal Fertilizers Visakhapatnam has a capacity of 80,000 tonnes of N per year as also 73,000 tonnes of P_2O_5 with urea, ammonium and phosphate as its major product lines. M/s. Zuari Agro Chemicals Goa has a capacity to produce 175,000 tonnes of nitrogenous fertilizers and 42,000 tonnes of phosphatic fertilizers; it also produces ammonia, urea and NPK. Besides these, M/s. Southern Petrochemical Industries Corporation and Mangalore Chemicals and Fertilizers Limited are setting up fertilizer plants at Tuticorin and Mangalore with an annual capacity of 280,000 tonnes of N and 52,000 tonnes of P_2O_5 at Tuticorin and 160,000 tonnes of N at Mangalore. Letters of intent have also been issued to M/s. Shriram Chemicals and M/s. Shaw Wallace (Nagarjuna Fertilizers) for setting up plants at Kota and Kakinada.

In the co-operative sector, IFFCO has been maintaing good progress in the erection of their plants ot Kalol Kandla envisaging a capacity 215,000 of N and 127,000 tonnes of P_2O_5. Production is expected to commence by the end of this year. Also the Maharashtra Coorperative Fertilizers and Chemicals Limited have been granted a letter of intent to establish a plant in Bombay region for the manufacture of 66,000 tonnes of ammonia per year and 66,000 tonnes of ammonium chloride.

FACTS ON COMPANIES IN INDIA

As on September 30, 1973, 36,527 joint stock companies limited by shares with an aggregate paid-up capital of Rs. 54,220 million were at work in the various States and Union territories of India. These companies comprised 412 Government companies and 36,115 non-Government companies, having a paid up capital of Rs. 30,414 million and Rs. 23,806 million respectively. Of the companies at work, relatively larger number were private limited companies. For instance, out of 412 Government companies, there were 277 private limited companies and 135 public limited companies. Again of the 36,115 non-Government companies there were 29,258 private limited companies and 6857 public limited companies.

As on March 31, 1973, there were 538 foreign companies at work in the country.

In contrast, there were 259 Government companies during 1968-69 (81 public limited and 178 private limited) with total paid-up capital of Rs. 17,149 million. In the same year there were 27,714 non-Government companies (6465 public and 21,260 private limited) with a total paid-up capital of Rs. 2154 million.

COAL FEEDSTOCK FOR FERTILIZER PRODUCTION

The present world oil crisis makes it imperative for India to increase the utilisation of coal, both as feedstock and energy source. This will help curb consumption of crude oil and petroleum products whose availability and prices have undergone unprecedented changes during the last year resulting in steep increase in the foreign exchange requirements for their imports. The average price of crude oil had increased from $ 2 per barrel in the beginning of 1973 to $ 10 per barrel in January this year. Consequently, the foreign exchange requirements for import of crude oil and fertilizer products during the current year (1974-75) would be about Rs. 13,000 million against Rs. 2400 million last year. Alternative to restrict the import bill would include measures to minimise the consumption of petroleum products and other indigenously available energy sources.

India has a proven and indicated reserves of 50,000 million tonnes of non-coking coal. During 1972-73 the estimated production of coal including the lignite was 79.3 million tonnes. Increased utilisation of the available coal reserves would have to be considered not only as feedstock for fertilizer production but also for all other applications involving coal gasification use of synthetic natural gas as an industrial fuel, substitution of fuel oil by coal in existing stream and power plants and coal gas as starting point for organic chemical industry, stated India's Minister of Petroleum and Chemicals recently.

Out of the installed nitrogen capacity of 1.94 million tonnes, naphtha based fertilizer capacity is 1.51 million tonnes or about 78 per cent of the present installed capacity. Total naphtha based nitrogen capacity in operation and under implementation is about 2.18 million tonnes.

Some efforts at feedstock diversification had already been attempted in India during the last five years. Three large coal based plants, each with an annual capacity of 228,000 tonnes of nitrogen, were approved for construction at Ramagundam, Talcher and Korba and the first two of these are already under implementation. The rest of the additional nitrogen capacity has been planned almost entirely on heavy petroleum fractions. Projects based on heavy petroleum fractions are under implementation at Haldia and Nangal.

Total nitrogen capacity including capacities in operation, under construction and approved for implementation, would require annually about 2.5 million tonnes of naphtha and 3 million tonnes of heavy petroleum fractions as feedstock and 860,000 million tonnes of fuel oil as energy source. To meet this requirement, crude oil worth over $ 450 million would have to be imported. This outflow of foreign exchange is indeed to be minimised.

Possible areas in which efforts could be concentrated to save on petroleum products were suggested by the Minister. He stated that measures should be implemented to save on naphtha per unit of nitrogen production. It would also be necessary to examine the implications of change over to coal for steam generation in fertilizer plants which would be using about 550,000 tonnes of fuel oil in 1974-75. When capacities under implementation were commissioned and brought to full utilisation, the fuel requirement would increase to about 860,000 tonnes.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

NEW CRANK-CASE BORING MACHINE

A special purpose crank-case boring machine has successfully been developed by a small-scale engineering unit in Kolhapur (Maharashtra).

The new machine takes only 10 minutes to bore a crank-case, whereas its imported counterpart takes one hour for the same job. It can be operated by any semi-skilled operator.

The machine, mounted with five spindles, can bore five diameters with consistently precise distant location. The spindles are mounted with multi-tools. Spindle rotation and sliding movements are electrically programme-controlled.

The electrical programme, design and settings are indigenous.

JOINTING DEVICE FOR STRUCTURAL MEMBERS

An ideal jointing device for structural members called "unishear connector" is stated to have been invented by a party in Bombay.

The unishear connector has manifold innovational characteristics. Only one bolt and nut set is required for the assembly of structures having shear connectors of any capacity (even upto 300-tonnes forces) and the bolt carries no structural load. The transfer of forces through unishear connectors is completely axial and there is no eccentricity in load transfer, which is considered to be the biggest handicap in conventional jointing devices. Two halves of the shear connectors are exactly identical which reduce the inventory of standardised components by 50 per cent. Locking of shear connector is exact in pre-determined structural geometry. Shear connector joint acts as on ideal pin joint and can resist tension, compression and shear forces concurrently.

The inventor has recently been given the highest cash award of Rs. 5,000 by the National Research Development Corporation, New Delhi, for this successful invention.

SHOCK PROTECTION DEVICE INVENTED

An electric shock protection device is stated to have been recently invented by a party in New Delhi.

The device cuts off power not only to the faulty appliance but to itself as well. It can be used for controlling individual or multiple equipment and both on AC DC circuits with equal facility.

Whatever the actual leakage in the equipment may be, the protection device limits the intensity of shock to about 300 microamperes, which can be barely felt.

The inventor has recently got a cash award of Rs. 3,000 from the National Research Development Corporation, New Delhi in token of appreciation of his achievement.

GIANT REFUELLER DEVELOPED

A 45-KL refueller has recently been developed by the Indian Oil Corporation (IOC) to meet the fuelling requirements of Jumbo jets.

The refueller can supply aviation fuel at the rate of 4,500 litres a minute under controlled delivery nozzle pressure. The refueller pump is driven by an independent diesel engine, developing 130 HP at 1600 R.P.M.

Two short deck hoses (3.5 metres each) and two long hoses each of 30-metre length have been provided for delivery so that the refueller can be used to supply fuel to any type of aircraft. All refuelling valves are operated by pneumatic pressure.

To reach the fuel supply couplings of Boeing 747 which are nearly 16 ft. above the ground level, a sliding platform has been provided on top of the refueller tank rear end. This platform can be extended upto a distance of 4.5 ft. on either side of the refueller tank to facilitate connection of fuel delivery nozzles to aircraft fuel supply couplings.

A silver shield has recently been awarded to IOC for this commendable effort on import substitution by the National Research Development Corporation, New Delhi.

SNOW DRILL FABRICATED

A snow drill has successfully been fabricated by the Central Drilling Division of the Geological Survey of India which can determine the thickness of ice and snow deposits. Thus it is very useful in the scientific study of glaciers. It has been designed for converting electrical energy into heat.

The drill has resulted in foreign exchange savings. For the first time, Indian geologists, engaged in the scientific studies relating to glaciers in the high Himalayan tracts are being equipped with a hot point electrical drill.

INDIA'S ATOMIC ENERGY INDUSTRY

AN OUTLINE

India is one of the few countries in the world which have established themselves in the field of atomic energy. The policy of the Indian Government has been to attain maximum self-reliance in the line and towards this end, the Department of Atomic energy has achieved progress in strengthening the technological infra-structure to support the nuclear energy programme.

The Bhabha Atomic Research Centre (BARC), Bombay, is the national centre for research and development work in nuclear energy and related disciplines. Its facilities include 4 research reactors, namely, CIRCUS (40 MW), Apsara (1 MW), ZERLINA (a zero energy thermal reactor) and PURNIMA (a zero energy fast reactor), besides sophisticated computers and specialised laboratories. Also, it has a uranium metal plant, a fuel elements fabrication plant, a plutonium plant and so on. An important recent achievement of BARC was the manufacture, for the first time in India, of the fuelling machine head for the second unit of Rajasthan Atomic Power Project, an extremely sophisticated item for power reactors having over 500 sensitive components. BARC has also to its credit the delivery of the first India-made reactor vessel, Calandria, for installation in the Rajasthan Atomic Power Project (Unit II). This was fabricated by an Indian company with the assistance of the Department of Atomic Energy based on designs supplied by M/s. Atomic Energy of Canada Limited.

In the context of nuclear power generation, the Tarapur Atomic Power Station (near Bombay) is the first of its kind in India. It has two Boiling Water type reactors fuelled by enriched uranium with a total output of 400 MWe of electricity. The power generated by the Station during the first eleven months of 1973-74 was as much as 1856 million kwh against 1,132 million kwh in 1972-73 and 1189 million kwh in 1971-72.

The Rajasthan Atomic Power Station at Ranapratap Sagar (Rajasthan) is under construction with Canadian assistance. This Station is to have two natural uranium fuelled and heavy water moderated Candu-type reactors with a total net output of 400 MWe of electricity. The first reactor is already supplying power to the Rajasthan grid. This unit is operating at a power level of 135 MWe to 140 MWe. In Unit II which is under construction, the reactor vessel and end-shields are being installed. The power being supplied to the Rajasthan grid works out to an average of almost 3 million units per day which means a daily revenue of about Rs. 0.3 million.

The Madras Atomic Power Station at Kalpakkam (near Madras) will be the third Atomic Power Station in India and will have two Candu-type reactors similar to the Rajasthan Station. The Kalpakkam project will be indigenous to the extent of about 80 per cent and there is no foreign collaboration in its design or construction. At this Station, the reactor building of unit I has already been completed. The turbine building, service building and demineralizer plant building are also ready.

The commencement of work on India's fourth nuclear power station at Narora (U. P.) was recently inaugurated. This station will consist of two units of 220 MWe each, the first unit is expected to be ready in 1982.

Already there is a heavy water plant at Nangal (Punjab) operated in conjunction with the Nangal Plant of the Fertilizer Corporation of India. This plant has an annual capacity of about 14 tonnes. Four more heavy water plants are being erected in Kota (Rajasthan), Baroda (Gujarat), Tuticorin (Tamil Nadu) and Talcher (Orissa), to produce about 300 tonnes of heavy water a year for use in nuclear power plants in the country. Of these, the Baroda plant is scheduled for commissioning by June 1974. The Kota plant being built by the Department of Atomic Energy next to the Rajasthan Atomic Power Station will use steam and electricity from the nuclear station and will produce about 100 tonnes of heavy water every year. The plant is based mostly on the know-how generated by the BARC. The Baroda plant which is based on the Ammonia Hydrogen exchange process developed by a French Consortium, will be linked to the synthesis gas stream of the Fertilizer Plant of the Gujarat Fertilizer Corporation. Its capacity is expected to be 67.2 tonnes a year. The Tuticorin Plant will be similar to the Borada Plant with a capacity of 71.3 tonnes per year. The Talcher Plant will use the synthesis gas stream of the ammonia plant being set up at Talcher by the Fertilizer Corporation of India and will produce 62.7 tonnes of heavy water a year.

The Nuclear Fuel Complex in Hyderabad is an integrated fuel manufacturing facility set up by Indian scientists and engineers with indigenous knowhow to meet the fuel requirments of India's nuclear power stations. The Complex has seven chemical and metallurgical plants, namely, the Zirconium Oxide Plant, the Zirconium Sponge Plant, the Zircaloy Fabrication Plant, the Uranium Oxide Plant, the Ceramic Fuel Fabrication Plant, the Enriched Uranium Oxide Plant and the Enriched Fuel Fabrication Plant to convert raw materials and minerals, such as, zircon sand, uranium concentrates and enriched uranium hexafluoride to finished RAPP and TAPS type fuel elements, and other zircaloy reactor components and hardware, such as, calandria tubes, coolant tubes, fuel channels, end plugs and spacer wires.

Good progress in the operation of the various plants at the Complex has been achieved. Some of the recent highlights include the commissioning of the enriched uranium oxide plant and of the enriched fuel fabrication plant, successful fabrication and supply of enriched fuel assemblies to the Tarapur Atomic Power Station and Rajasthan Power Station, optimisation of process parameters and production of various electronic grade materials, commissioning of the Titanium Pilot Plants and commencement of trial production of commercial grade titanium sponge and so on.

An interesting feature of the Atomic Energy industry in India is its capability of supplying radio isotopes, equipment and services. Radio isotopes, labelled components and equipment were exported to several countries including Australia, Austria, Denmark, France, Indonesia, Malaysia, Nepal and Singapore during 1973-74. In the same year, a gama chamber (900 unit) was exported to Shri Lanka under UNDP programme. More than 34,000 radio isotope consignments were sold during the year including some 23,900 consignments for medical and 2,200 consignments for industrial applications. The sale value of these during 1973-74 was Rs. 5.6 million, an increase of about 20 per cent over 1972-73.

In the field of nuclear medicine too, India has achieved considerable progress. The Radiation Machine Centre of BARC has in the last decade or so provided facilities for diagnostic, investigative and therapeutic uses of radio isotopes on about 20,000 patients. The Centre enjoys the status of a Regional Research Centre for Nuclear Medicine in South East Asia for the World Health Organisation in collaboration with the International Atomic energy Agency. The Tata Memorial Centre, Bombay comprising Tata Memorial Hospital and a Cancer Research Institute also conducts extensive medical research.

In the field of Biology and Agriculture, several accomplishments have been made among which some of the recent ones include the release of a bold seeded table variety of groundnut suitable for export, the development of jute mutants which provide high yields, establishment of insecticidal property of the vapours of garlic oil against insect pests, preservation of foods, optimal irradiation for extending the shelf-life of various flesh foods,grains, fruits and tubers and so on.

Besides the above achievements, there are other atomic energy establishments which have contributed to the success of the nuclear programme in India. The Gauribidanur Seismic Station near Bangalore helps in the detection and identification of underground nuclear explosions and also facilitates seismic research. The Variable Energy Cyclotron, Calcutta is to be a national facility for advanced work in nuclear physics and for the controlled direct irradiation of biological and irradiated products. A High Altitude Research Laboratory at Gulmarg provides facilities for high altitude research to all scientific institutions.

Apart from the progress achieved by the Bhabha Atomic Research Centre (BARC) in research and development work in nuclear energy and related disciplines, there are other research centres in India that have been active in the field. The Tata Institute of Fundamental Research (Bombay) is the national centre of Government of India for nuclear science and mathematics. Its special facilities include the National Computation Centre with a C. D. C. 3600-160A computer system, a Balloon Fabrication and Flying facility at Hyderabad, Tritium Laboratory for hydrological studies and an Electron Microscope, X-Ray units, an Electro-magnetic mass separator and so on.

Another research institute, the Saha Institute of Nuclear Physics (Calcutta) engages itself in several fields of research including Electron Microsocopy, Mass Spectrometry, Microwave absorption spectroscopy, nuclear activation, radio chemistry, solid state and technical physics and so on. A Reactor Research Centre is being set up at Kalpakkam, near Madras Atomic Power Station, the most important facility at this centre being the fast breeder test reactor which would provide experience in the design, construction and operation of a plutonium fuelled sodium cooled fast reactor.

There are also supporting industries, such as, M/s. Indian Rare Earths Limited, M/s. Electronic Corporation of India Limited, Hyderabad and M/s. Uranium Corporation of India Limited, Jaduguda. M/s. Indian Rare Earths Limited operates the mineral sands industry in Kerala and also produces thorium at Trombay. During 1973-74, the company registered sizeable improvement in its turnover and foreign exchange earnings. Its export realisation of rare earths chloride touched Rs. 10 million mark in the year. The company has established a firm footing in Japanese market for rare earths-fluoride, a product recently introduced in India's export market. The export earning from beach sand minerals was nearly double during 1973-74 than in the earlier year.

M/s. Electronic Corporation of India Limited succeeded in producing worth Rs. 82 million in the first ten months of 1973-74 as against Rs. 65.7 million during the entire year 1972-73. The Corporation has introduced its all solid state modular version commercial T.V. receivers into the market. It has also introduced solid state annunciators, industrial time relays and intrinsically safe relays. It has also introduced several new products on the systems side, instruments side as well as components side. It has recently introduced two way wireless communication sets also.

The Uranium Corporation Ltd., is responsible for the development of the uranium mine and operation of the uranium mill at Jaduguda. The mine is being deepened now and the construction of plants for the recovery of molybdenum and copper as by-products from Jaduguda ore and recovery of uranium from copper tailings is progressing.

India is one of the nine member countries of the International Atomic Energy Agency (IAEA). Being one of the most advanced in the technology of atomic energy, the country has been a member of the Agency's Board of Governors. India enjoys bilateral collaboration arrangements with the Federal Republic of Germany, Denmark and Bangladesh in the context of peaceful uses of atomic energy. ☐

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HEAVY ELECTRICAL EQUIPMENT TO U.K.

In tune with the export success of India's heavy electrical equipment industry in recent years, M/s. Bharat Heavy Electricals India Ltd. (BHEL), has made a breakthrough in the West European market. The Bhopal factory of BHEL has secured an order for the supply of sophisticated rectifier transformer equipment to the General Electric Company of U. K.

Valued at £ 35,000 (Rs. 0.63 million), the order has been secured against stiff competition from leading manufacturers of heavy electrical equipment in Europe, including some British firms. This is understood to be the first order from an advanced European country for rectifier transformer to be used along with equipment for obtaining 300 KW DC output. Creditably, the equipment to be supplied in fulfilment of the order is designed and manufactured entirely indigenously and would conform to international standard for price and quality.

The Bhopal unit of BHEL is engaged in the manufacture of heavy electrical equipment needed for generation, transmission and distribution of power, such as, hydraulic and steam turbines, generators and motors and transformers including traction equipment for broad gauge railways. It achieved an increase of 47 per cent in production (1973-74) as compared to 1972-73. The production performance of all the units of BHEL stood at Rs. 1900 million during the first eleven months of 1973-74 (April 73 - February 1974) as compared to Rs. 1080 million in the corresponding period of the preceding year.

Export of heavy electrical equipment from India has been witnessing uptrend year to year. The export value of the industry reached a level of Rs. 234 million (1972-73) compared to Rs. 187 million in 1971-72, Rs. 161 million in 1970-71, Rs. 145.50 million in 1969-70 and Rs. 133 million in 1968-69. In the first seven months of 1973-74 (April-October 1973), the export value was of the order of Rs. 130 million. The export range broadly includes electrical power machinery and switchgears, equipment for distributing electricity, domestic electric equipment, telecommunication equipment, electric apparatus for medical purposes, radiological apparatus, and other electrical machinery and apparatus. Kuwait, Iran, Iraq, Muscat, Qatar, USSR, Sri Lanka, New Zealand, Sudan, Dubai, Malaysia, Thailand, Poland, Nigeria, Saudi Arabia, Federal Republic of Germany, UK, Netherlands and Arab Republic of Egypt are among the principal importing countries.

MEDICINES TO WORLD MARKETS

India's exports of medicinal and pharmaceutical products amounted to Rs. 103 million in 1972-73, registering a moderate increase over Rs. 96 million in the year before. The exports rose to this level from Rs. 40 million in 1968-69, Rs. 60 million in 1969-70 and Rs. 85 million in the following year.

During the first half of 1973-74 (April-September 1973), the exports earned Rs. 51 million which were higher than the exports in the corresponding period of the preceding year at over Rs. 40 million.

A large number of overseas markets including the developed countries import India-manufactured drugs and medicines. U.S.S.R., U.S.A., U.K. and Federal Republic of Germany are among the bulk importers. The exports range of the industry includes wide range of products among which medicaments, alkaloids, antibiotics, vitamins and vaccines are significant.

Among the various exporting units in the line, M/s. Indian Drugs and Pharmaceuticals Limited (N-12, NDSE Part II, New Delhi-49), exported medicinal and pharmaceutical products to the tune of Rs. 5.1 million during 1972-73. The Company's exports stood at Rs. 0.1 million in 1968-69, Rs. 0.5 million in 1969-70, Rs. 3 million in 1970-71 and touched a peak level of Rs. 5.7 million in 1971-72.

During the year 1972-73, the Company exported surgical instruments worth Rs. 5.1 million to U.S.S.R. It also supplied drugs worth Rs. 0.8 million to Bangladesh. As on April 1, 1973, the Company had orders for export of the value of Rs. 6.4 million on hand.

The two units of M/s. Indian Drugs and Pharmaceuticals Limited (IDPL) at Hyderabad and Rishikesh are engaged in the manufacture of synthetic drugs and antibiotics respectively. The Synthetic Drugs Plant, Hyderabad, increased its installed capacity of drugs from 1208 tonnes in 1971-72 to 1,455 tonnes during 1972-73. The actual production during 1972-73 was 1,166 tonnes. During the year 1973-74, the plant produced 983 tonnes of various drugs till December, 1973, the average monthly production being 109 tonnes as compared to the average monthly production of 97 tonnes for the year 1972-73. The Company has received an industrial licence in June 1973 for the expansion of the capacity of the plant to about 2,000 tonnes. This expansion is expected to be completed by 1974-75. The Company has also received industrial licence to manufacture 5 tonnes of sulphamethizole per annum and also formulations of various bulk drugs.

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The Antibiotics Plant at Rishikesh produces a wide range of antibiotics consisting of sodium penicillin, procaine penicillin, streptomycin, tetra-cycline, oxytetracycline and nystatin. As against a total production of 120,664 milliard units of different antibiotics in 1972-73, the plant produced 79,713 milliard units upto December 1973.

While such is the production pattern in the field of drugs and pharmaceuticals, the Company is equally active in raising the production of surgical instruments. The Surgical Instrument Plant at Madras, which commenced production in 1965, has come to play a significant role in the field. Its production pattern witnessed continuous diversification in view of the changed demand position within the country. During 1971-72, the plant's production was of the order of 565,120 numbers of surgical instruments valued at Rs. 4.58 million. During the first nine months of 1973-74 (April-December 1973), the plant produced 242,365 instruments valued at Rs. 2.2 million and executed job orders of Rs 0.3 million.

Two major developments in India's pharmaceutical industry have been the growing degree of indigenisation and import substitution and the increasing emphasis on advanced research. IDPL is indeed in line with these developments and its contribution in the context of import substitution is particularly mention-worthy.

CARPETS IN EXPORT TRADE

Carpets, druggets and numdahs constitute a prominent area of export growth in India's foreign trade in wool and woollens. Their export earning was valued at Rs. 212.50 million (1972-73) as compared to Rs. 131.80 million in 1971-72. Federal Republic of Germany, USA, UK, Canada, Natherlands and Sweden are the major traditional importers.

In this context, the export effort of M/s. Bharat Carpets Ltd. (28-B, Connaught Place, New Delhi), a noted manufacturer of machine-made all wool tufted carpets, merits mention. Of their total production of 311,110 sq. metres (1972-73) of these carpets, the firm succeeded in exporting as much as 263,460 sq. metres at a value of Rs. 12.10 million. Their total sales turnover, including local sales for the year, amounted to Rs. 15.40 million. In 1973-74 (till February, 1974), the foreign exchange earning of the firm was of the order of Rs. 10.20 million.

Marketed under the trade name 'Decora', the carpets manufactured by the firm are currently being exported, mainly to USSR and Poland. The firm, however, hopes to get shortly a foot-hold in the European Economic Community market as well. Creditably, it has been in the export field ever since it took over regular production of tufted carpets in 1969-70.

The firm depends entirely on indigenous material. They are making these carpets from cent per cent fresh virgin wool from Rajasthan, using natural rubber latex (from Kerala) as back coating. It claims to be the first and the only unit of its kind in the country.

Besides woollen tufted carpets, the Delhi firm is also manufacturing candlewick (cotton), bed covers, cushion covers and bath mats. By way of diversification, it has obtained official approval for the manufacture of Axminster type design carpets.

The various departments of the firm's mills are manned by qualified technicians. To ensure proper quality control at every stage of manufacture, the firm has equipped its textile and latex laboratories fully with the latest measuring and testing instruments.

EXPORT EFFORT OF NAFED

The National Agricultural Cooperative Marketing Federation of India (54, East of Kailash, New Delhi), has been contributing its mite to the cause of export promotion. Its export earning of agricultural commodities stood at Rs. 38.7 million during 1971-72. It was at the record level of Rs. 57 million in 1969-70 but declined to Rs. 9.3 million during 1972-73.

During the first eight months of 1973-74, NAFED's exports were valued at Rs. 27 million as against the total exports effected during 1972-73. This includes a bulk order from the cooperatives in Japan for export of 5 million jute bags valued at Rs. 17 million.

The major commodities which accounted for the rise in the export turnover of the Federation in the past, namely, pulses, chillies and onions witnessed fall due to the policy decisions taken either by the Indian Government or by the major importing countries. For instance, export of pulses in which the Federation had been enjoying virtual monopoly was banned save a few minor varieties, namely, gulabi gram, peas, kesari dal and moth subject to a ceiling of 5000 tonnes per year. Export trade in chillies has been canalised through State Ageney and here again NAFED could not display its export energy. Onion exports to Sri Lanka, the major importer from India, could not materialise for the reason that the Government of Sri Lanka banned import of onions as well as chillies from India due to the foreign exchange stringency faced by that country.

Other commodities exported by the Federation are spices, red onions, garlic, rice and ginger. The Federation has been endeavouring to diversify its export trade and secure sizeable business in timber, silk waste, turmeric and Kendu leaves. Exploratory work was also made by the Federation for developing export of forest-based commodities with the help of Tribal Development Cooperative Societies. It is expected that NAFED will be able to export substantial quantities of non-traditional agro-based commodities particularly in regared to perishable items like red onions, apples, and wet ginger as also in the field of raw and processed spices and forest produce.

Contribution of NAFED in the context of expansion of trade and distribution of agricultural machinery is notable. The distribution of agricultural machinery and spare parts was worth Rs. 19 million during 1972-73 as against a distribution turnover of Rs. 0.4 million in 1968-69; the Organisation is the pre-eminent distributor of harvesting combines in the country.

EXPORT PERFORMANCE AND POTENTIAL

INDO-JAPANESE TRADE TRENDS

Japan now occupies the foremost rank among the foreign markets for Indian goods. This is revealed by India's export statistics which are now available upto October, 1973. The table below indicates the positions of four of the foremost countries in India's external trade :

INDIA'S TRADE WITH SPECIFIED COUNTRIES (in million Rs.)

Countries	**USA**	**USSR**	**Japan**	**UK**	**Total**
Year			**Exports**		
1970-71	2,073 (13.5%)	**2,099** (13.7%)	2,035 (13.3%)	1,704 (11.1%)	15,352
1971-72	**2,631** (16.4%)	2,087 (13.0%)	1,823 (11.3%)	1,687 (10.5%)	16,082
1972-73	2,757 (14.1%)	**3,048** (15.5%)	2,172 (11.1%)	1,725 (8.8%)	19,609
1973-74 (April - October 73)	1,704 (13.3%)	1,768 (13.9%)	**1,954** (15.3%)	1,450 (11.4%)	12,762
			Imports		
1970-71	**4,530** (28.0%)	1,061 (6.5%)	833 (5.1%)	1,268 (7.8%)	16,342
1971-72	**4,187** (23.1%)	873 (4.8%)	1,616 (8.9%)	2,208 (12.1%)	18,245
1972-73	2,246 (12.5%)	1,057 (5.9%)	1,702 (9.5%)	**2,255** (12.5%)	17,967
1973-74 (April - October 73)	**2,545** (19.1%)	559 (4.2%)	1,266 (9.7%)	1,379 (13.4%)	13,292

The figures within brackets show the percentage shares in the total exports and imports.

Two way trade between India and Japan has steadily increased during the last two decades. In the earlier decade - the fifties - the rate of growth was nearly the same for exports as well as imports. The later decade witnessed a levelling of India's imports from Japan but a steady increase in exports. The earlier trend has, however, revived after 1970. In the first seven months of 1973-74 for which the figures are now available, Japan took 15.3 per cent of India's exports followed closely by USSR (13.9 per cent), USA (13.3 per cent) and UK (11.4 per cent). The share of Japan as a source of supply for India's imports during the same period (April-October 1973) was 9.7 per cent against only 5.1 per cent in 1970-71 ranking third after USA (19.1 per cent) and UK (13.4 per cent).

The bilateral trade has hitherto comprised of India's exporting mainly raw materials and primary products to Japan, such as, minerals (mostly iron ore); raw cotton, fish, tobacco and spices accounting for about 85 per cent of the total exports and importing capital goods, machinery and processed goods from Japan. Of late, there has been some movement of manufactured goods from India to Japan but still it is a small fraction of exports.

Japan is by far the most important buyer of Indian iron ore taking about 85 per cent of the total exports of this item from India. In 1972-73, about 18 million tonnes of iron ore were exported from India to Japan earning Rs. 917 million (about 42 per cent of the total exports from India to that country). In 1973-74 (seven months only), the quantity exported was more than nine million tonnes valued at Rs. 517 million. The varieties of iron ore exported cover a wide range of the mineral from the average 56 per cent to rich 68 per cent. It was with the assistance from Japan that India was able to develop a large capacity for exports of iron ore. Geographical considerations have encouraged cooperation between the two countries in this matter.

Another major item of India's export to Japan is fish (mainly shrimp). Exports during 1972-73 were valued at Rs. 291 million (about 13 per cent of total exports) which were higher by 30 per cent over the previous year level. In the first seven months of 1973-74, exports jumped to Rs. 335 million which made Japan the biggest buyer of Indian shrimps with a share of nearly 70 per cent of exports to all destinations. The rising trend in exports of shrimps to Japan is expected to continue as fish in the Japanese waters are now considered unsuitable for consumption because of high mercury content.

Raw cotton and oil cakes exported from India to Japan earned about Rs. 110 million and Rs. 130 million respectively in 1972-73. Japan is a steady buyer of these items. Hides and skins, mostly tanned, were exported for a value of Rs. 79 million in 1972-73.

Apart from iron ore required for Japanese steel industry, Japan also imported (in 1972-73) from India manganese ore and chrome ore valued at Rs. 114 million for her steel industry.

Cashew kernels, tea, tobacco, rose wood, mica and vegetable oils are other raw materials and primary products exported from India to Japan. These items together with the other items mentioned above account for more than 85 per cent of India's exports to Japan.

Recently, manufactured goods from India have also started moving although still in small quantities. Cotton fabrics both mill made and handloom exported in 1972-73 fetched Rs. 24 million and readymade garments another Rs. 5 million. Exports of precious stones (worked) were valued at Rs. 73 million, an improvement of about 64 per cent over the previous year level. Handicrafts brought as much as Rs. 13 million in the same year.

Exports of Indian engineering products to Japan amounted merely to Rs. 1 million in 1970-71. They doubled next year and again trebled in 1972-73 to Rs 6 million. In 1973-74, exports rose at a much higher rate. In the first seven months, the exports were valued at Rs. 14.3 million, out of which calculating machines alone earned Rs. 12.5 million. Lathes fetched Rs. 0.9 million and vertical diesel engines another Rs. 0.4 million. Other items exported were textile machinery parts, electric controlling apparatus, auto parts and bicycle parts bringing about Rs. 0.1 million each.

Apart from the above engineering products, India also exports iron and steel to Japan. These exports in 1972-73 were 178,000 tonnes valued at more than Rs. 56 million.

Imports from Japan are also going up steadily. The main commodities of imports in 1972-73 were iron and steel (Rs. 672 million), machinery (Rs. 273 million), transport equipment (Rs. 56 million), fertilisers (Rs. 72 million), chemical elements and compounds (Rs. 200 million) and textile fibres (Rs. 62 million).

Japan has been progressively liberalising imports of agricultural and industrial products. Under the Generalised Scheme of Preferences (GSP), Japan has granted (effective August 1971) tariff reductions at varying percentages for a number of agricultural and manufactured goods from developing countries subject to quota restrictions on individual items and ceilings for import from individual developing countries.

In order to promote better understanding in the matter of economic cooperation and establish useful contacts, the two countries have inter-alia set up the Indo-Japan Committee for Studies in Economic Development and the Indo-Japan Business Cooperation Committee. The latter is at the trade level and has set up a joint standing committee for conducting continuous studies for development of two-way trade and establishing joint ventures. Closer contacts between the businessmen of the two countries would, no doubt, help in furthering Indo-Japanese trade, in particular the flow of non-traditional products from India to Japan.

ENGINEERING GOODS TO SOUTH EAST ASIA

While India' stotal exports of engineering goods amounted to Rs. 1418 million during 1972-73, they were worth as much as Rs. 402 million to South East Asia. Bangladesh was the major customer at a value of Rs. 115 million, followed by Singapore at Rs. 50 million, Malaysia (Rs. 48 million), Nepal (Rs. 44.3 million), Sri Lanka (Rs. 41 million), Thailand (Rs. 32.7 million), Indonesia (Rs. 30 million), Hong Kong (Rs. 18.5 million), Philippines (Rs. 7.6 million), Burma (Rs. 7.4 million), Japan (Rs. 5.8 million), South Vietnam (Rs. 1.0 million), South Korea (Rs. 0.6 million), Formosa (Rs. 0.6 million) and North Korea (Rs. 0.5 million).

The principal varieties of engineering products that have been exported from India to South East Asian markets are fabricated steel structurals, diesel engines and parts, automobiles and parts, electrical power generating machinery including motors, bicycles and parts, electric control gears, boilers and fittings, iron and steel castings, electric wires and cables, transmission line towers, jute and textile mill machinery, railway wagons and coaches, agricultural implements, brass and copper sheets and circles.

While the share of the South East Asian markets in the total Indian engineering goods exports worked out to 23 per cent in 1972-73, the entire Asian market accounted for 53 per cent, Africa 18 per cent, East Europe 13 per cent, West Europe 7 per cent, America 6 per cent and Australia and New Zealand 2 per cent.

The Engineering Export Promotion Council, Calcutta have fixed targets for engineering goods export at Rs. 2440 million in 1974-75 and Rs. 2850 million in 1975-76. The targets set for South East Asian region alone are Rs. 630 million Rs. 745 million respectively in these two years.

An interesting feature of engineering exports from India pertains to the widening of the range of products going into world markets and the steady roads being made into the sophisticated markets of the advanced countries. Indian exporters have been successfully competing in the world markets for securing global tenders. Supplies under these contracts are being made to countries in South East Asia, Africa, East Europe, as also to countries like U.S.A. and the Federal Republic of Germany. These high value contracts mainly cover supplies of power cables, transmission line towers, railway wagons, rail and rail accessories, HR boilers and textile machinery. Turnkey projects have also been secured for items like cement plants, water pumping plants and power stations.

Among the measures taken for promoting exports of engineering products to all destinations including South East Asia, are the provision of imported raw materials to registered exporters, supply of indigenous raw materials like steel and aluminium on priority and organising of bulk imports of certain raw materials by the public sector agencies for export fabrication. Also the Trade Development Authority had been entrusted with the job of promoting export production and overseas marketing of selected engineering products. The Projects and Equipment Corporation, a subsidiary of the State Trading Corporation, has also enlarged its activities to increase the export of engineering goods.

Under the auspices of ECAFE, an Asian Trade Expansion Programme has been launched recently in which India and most of the South East Asian countries are participating. Requests for tariff and non-tariff concessions are to be exchanged under this programme and India's request list consists mainly non-traditional items especially engineering items. The Asian Development Bank has been granting loans to Asian countries for setting up various industrial projects. The Engineering Export Promotion Council is engaged in the task of reaping full advance of opportunities provided by these loans. As by the end of 1973 the total value of contracts secured by India against ADB's advances amounted to $ 6.75 million.

TRADE PATTERN WITH GULF COUNTRIES

India's aggregate exports to the oil exporting countries amounted to Rs. 920 million during 1972-73 accounting for nearly 4.7 per cent of India's total exports during the year. On the other hand, Indian imports from these countries at around Rs. 2000 million were more than double the value of her exports.

Of the total exports to the oil producing countries, the value of exports to Gulf countries totalled Rs. 730 million during 1972-73. To Iran, the export value was worth Rs. 248 million, Kuwait Rs. 150 million, Saudi Arabia Rs. 121 million, Iraq Rs. 110 million, Qatar Rs. 33 million, Bahrein Rs. 31 million, Oman Rs. 24 million and Abu Dhabi Rs. 13 million. Among the non-Gulf oil producing and exporting countries, exports to Nigeria amounted to Rs. 96.5 million, while to Indonesia they were worth Rs. 53 million, Libya Rs. 35.5 million, Venezuela Rs. 1.8 million, Algeria Rs. 1.6 million and Ecuador Rs. 0.6 million.

As for imports into India, the Gulf countries accounted for Rs. 1991 million. The major suppliers were Iran (Rs. 1215 million), Saudi Arabia (Rs. 448 million), Kuwait (Rs. 225 million), Iraq (Rs. 66 million), Bahrein (Rs. 3.4 million) and Oman (Rs. 3.3 million). Imports from Qatar and Abu Dhabi were negligible. Of other imports from non-gulf oil producing and exporting countries at Rs. 5 million, India imported worth Rs. 2.7 million and Rs. 2.1 million respectively from Indonesia and Algeria during 1972-73.

Major products exported to the oil exporting countries from India consist of tea, spices, jute manufactures, machinery and transport equipment.

Substantial scope exists for enhancing Indian exports to these countries in respect of both traditional and non-traditional products. With a view to meet the rising import bill from crude and other raw materials and to utilise the new export opportunities provided by the growing affluence of the oil producing countries, the Government of India have evolved an export programme under which exports to these countries are sought to be stepped up from the level of about Rs. 920 million in 1972-73 to Rs. 4480 million by the end of 1976-77. Basmati rice, sugar, cement and steel are stated to be potential items in this context. The programme also envisages a significant improvement in the export of items like engineering goods, tea, man-made fibres, chemicals and allied products, plastics and linoleum, cotton textiles including ready-made garments, spices, handlooms and cinematographic films.

The various measures recently taken by the Government of India in the direction of promoting exports to the Gulf countries have already met with initial success. An important outcome of the visit of India's Commerce Minister to Kuwait in February this year has been the conclusion of a long term trade and economic agreement between India and Kuwait. The agreement provides for a joint committee of representatives of both the countries to identify fields, projects and commodities for expansion of economic cooperation and promoting trade exchanges.

In pursuance of the last session of the Indo-Iran Joint Commission and in the light of the discussions between the leaders of the two countries, the Indian Government intends to conclude a long-term trade agreement with Iran. Similarly, efforts are underway to forge new instruments of cooperation between Iraq and Kuwait. There is good scope for India's acquiring large contracts and projects from Iraq including a Rs. 500 million textile mill and railway projects.

Following the visit of India's Prime Minister to Iran, the latter is expected to provide credits in excess of $ one billion to India to help maximise the capacity of its export oriented industries; increase in the production of Kudremukh iron ore project in Karnataka from 3.5 million tonnes of pellets per year to 7.5 million tonnes to be exported to Iran; study to increase the capacity of alumina project to 300,000 tonnes over which Iran would have first option and establishment of a joint shipping line with Iranian financial assistance for an initial capacity of 500,000 tonnes to operate between the two countries and to South East Asian ports as also other routes eventually.

EXPORT TRADE IN BASMATI RICE

India-produced Basmati (superior quality) rice is becoming increasingly popular in the international markets. Among the countries that are showing interest in its purchase are the West Asian markets, U. K., Mauritius, U.S.A., Hong Kong, Canada, Singapore, Seychelles, Fiji, Nigeria, Federal Republic of Germany, Australia, South Yemen People's Republic, Kenya, Zambia and Switzerland. During 1972-73, nearly 22,920 tonnes of Basmati rice was exported to fetch Rs. 37.70 million as compared to 11,920 tonnes exported at Rs. 19.26 million in 1971-72. Export trade in Basmati rice is canalised through the State Trading Corporation of India Limited.

Notwithstanding its importance in the domestic market for mass consumption, rice has come to be recognised as one of the foreign exchange earners for the economy. The twin factors of attractive international prices and an increase in demand for quality variety in foreign markets, export trade in the line particularly of Basmati rice is being encouraged by the Government of India. The country is able to earn sizeable foreign exchange through these exports and is in a position to import about 4 tonnes of ordinary rice or wheat against each tonne of Basmati rice exported. Also the export quantum of this variety of rice has no adverse impact on the availability of foodgrains within the country due to the fact that only a very small portion of its total production is being exported.

It is estimated that the present availability of superior rice suitable for export is in the range of 50,000 tonnes to 60,000 tonnes per year. Production of Basmati rice is confined to the States of Punjab, Haryana and U.P. Steps are being taken to improve its production to the extent of 200,000 tonnes.

Earlier, the State Trading Corporation of India has been getting rice through the Food Corporation of India under levy. Recently, the Corporation has, in order to boost exports, entered into arragements with State Governments for procurement of rice at existing market rates outside levy. Offers have been made to various countries in West Asia, U.K. and Mauritius and STC hopes to finalise the sales contracts shortly.

India is the largest producer of rice in the world and her annual production is in the neighbourhood of 45 to 46 million tonnes. Production of superior Basmati rice is a very small fraction. (about 0.11 per cent).

During 1972-73, Saudi Arabia proved to be the major importer of Basmati rice from India at a value of Rs. 12.1 million (6830 tonnes). Dubai was the next best importer at Rs. 6.44 million (2900 tonnes), followed by Muscat at Rs. 2.6 million, Bahrein Islands at Rs. 2.4 million and Kuwait Rs. 0.9 million. While the export to Gulf countries totalled Rs. 23.5 million, other countries imported worth Rs. 14.18 million.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

STEP FORWARD IN TRANSFORMER TECHNOLOGY

India's first 400 KV transformer has recently been tested at the Bhopal plant of the Bharat Heavy Electricals Limited (BHEL), Bhopal. Completely designed and fabricated by the engineers of BHEL, the new transformer is a higher capacity equipment compared to the 200 KV transformer currently in use in India.

Taking into account the current power shortage and constantly growing demand for power in India, it was essential to switch over to 400 KV transmission power system from the present 200 KV system. India has already planned to create a national inter-state power grid. A number of State Electricity Boards in India are in dire need of 400 KV CT transformers and other equipment for various power projects. For instance, U. P. Electricity Board has already floated enquiries for 400 KV CTs and other equipment for their Obra-Sultanpur-Lucknow 400 KV transmission line. Similarly, Maharashtra Electricity Board is also planning to procure equipment for their Koradi-Kalwa 400 KV line. Other states, such as, Punjab and Madhya Pradesh are also expected to procure this type of transmission voltage.

The developed transformer is suitable for a system having high voltage of 420 KV (BIL 1425 kVp) and a continuous current rating of 2000A. These CTs which are meant for metering and protection purposes in a transmission system, can be made to conform to Indian and International standards. Besides this, BHEL has also developed and manufactured a 400 kV class coupling capacitor. The coupling capacitor is one of the vital components of PLCC equipment. It has many uses in conjunction with power line carrier.

BHEL is currently engaged in setting up a transformer factory at Jhansi in Madhya Pradesh. This public sector unit is estimated to cost Rs. 150 million. This unit will be the first ever to be set up with completely indigenous technology without any foreign collaboration. At peak production, the unit will manufacture over 1,000 power and instrument transformers every year at a sale value of Rs. 140 million. It will effect an annual foreign exchange saving of Rs. 65 million. BHEL is already exporting transformers to a number of countries abroad.

POWER GENERATION PROGRAMME

TARGETS AND RESOURCES

The Indian economy has been experiencing power shortages in recent times. The major reason for the shortage was the poor rainfall in the catchment areas of hydel projects and the consequent inadequate replenishment in the hydel reservoirs. A three-pronged strategy has been evolved to meet the situation. Firstly, the existing thermal capacity in the economy is sought to be used intensively to secure the maximum generation expeditiously. Secondly, new generating capacity is to be added to expedite the commissioning of new power plants on a crash basis and thirdly, wastages are sought to be eliminated and the available electrical energy is distributed in the most equitable manner keeping in view the requirements of the priority sector of the country.

Notwithstanding the fact that there has been a nine-fold increase in the installed capacity of power generation since Independence, the demand for power has been growing constantly. The per capita consumption of electricity stands at over 97 kwh per year (1972-73). The following analysis reveals the planned endeavour for improving the power generation in the economy as also discusses the resource position not only in the hydro-power sector but in terms of thermal, nuclear and other non-conventional energy sources.

Power generation in India is based on hydro power plants, thermal power plants (based on coal) and nuclear power plants. Besides these, diesel generation is being resorted to feed some isolated localities to some extent. In Gujarat and Assam States, natural gas is also being utilised on a limited scale. By 1973-74, Indian economy is anticipated to have an installed power generating capacity of nearly 19 million KW as against only 2.3 million KW capacity at the pre-first Five Year Plan stage. The capacity at the end of the First Plan (1951-56) was of the order of 3.4 million KW. The same improved to 5.56 million KW by the end of the Second Five Year Plan (1956-61). By the end of the Third Five Year Plan (1961-66), it rose sharply to 10.17 million KW and by the end of the three Annual Plans during 1966-69, it went up to 14.29 million KW.

The Fifth Five Year Plan envisages creation of new capacity for power generation at 16.55 million KW with 33 million KW capacity in effective operation in the last year of the Plan. Of this additional capacity (16.55 million KW), hydro power is expected to be 6.42 million KW, thermal power 9.42 million KW and nuclear power 0.71 million KW. During the Fourth Five Year Plan (1969-74), actual addition to the installed generating capacity was 4.58 million KW. Of this, the share of hydro power was 1.6 million KW, thermal power 2.94 million KW and nuclear power 0.56 million KW.

India's Fifth Five Year Plan power programme includes 27 continuing projects, (18 hydro and 9 thermal) and 47 new projects (27 hydro and 20 thermal), totalling an addition of 16.50 million KW in the next five years (beginning with 1974-75). The power development in the future is expected to have considerable element of generation from large-size pit-head stations having a capacity of 2 million KW.

During the Fifth Plan, an investment worth Rs. 61,900 million has been proposed in the power sector. The total investment in the sector was worth Rs. 36,290 million at the beginning of the Fourth Plan (1969-70) The investment at the end of the Fonrth Plan is estimated at nearly Rs. 65,490 million.

India has substantial hydro power resoures. Its economically exploitable hydro-power potential was estimated at 25 million KW (continuous). The hydro-electric schemes in operation utilise a potential of about 2.8 million KW while the schemes presently under construction would develop a further potential of 1.6 million KW. On completion of these schemes, the utilisation of the potential would amount to about 17.6 per cent. (This potential excludes the seasonal energy generation particularly from schemes located in the Himalayan region with are largely run on the river type developments).

Thermal power is another important area in the context of planned power development. India has one of the largest coal reserves in the world. A recent estimate of the coal resources in the country has placed the quantum at 83,000 million tonnes of which 20,000 million tonnes are considered to be of the coking type, 6,100 million tonnes non-coking type and 2,000 million tonnes lignite. Considering the persent annual rate of mining of about 70 million tonnes, the available reserves are substantial.

As for oil and gas resources, proved crude resources are placed at 130 million tonnes of oil and 66 million cubic metres of natural gas. The Petroleum Geologists have identified 27 basins covering a sedimentary area of about 1.41 million sq. km. on land and about 0.26 million sq. km. for possible off-shore interest from the view point of oil exploration. Exploratory drilling so far has been conducted mainly on land in 7 of the more promising basins with bulk of it concentrated in 2 basins of greatest interest namely, the Cambay (Gujarat) and Assam basins which between them contain all the known oil fields of the country at present.

Nuclear fuel is an important non-conventional energy source. Uranium is the nuclear fuel currently being used on commercial scale for power generation. It is found at two locations in India, namely, Jaduguda and Narwanahar and the reserves are estimated at about 12,000 tonnes. Besides these mines, other deposits are also found at Singhburn in Bihar and minor deposits in Madhya Pradesh, Rajasthan, Himachal Pradesh and U.P. All these are in exploratory stage. It is estimated that the reserves of uranium available in India may be in a position to sustain about 5000 to 10,000 MW of nuclear power plant for its life time. Apart from uranium, the next important nuclear fuel is thorium which is a fertile material. The commercial use of thorium for nuclear power generation is tied up with development of the fast breeder reactor technology. India is the lagrest producer of thorium in the world.

Nuclear power generation programme during the Fifth Plan includes commissioning of the second 235 MW unit in Rajasthan Atomic Station and two units of 235 MW each in the Kalpakkam in Tamil Nadu. A new nuclear power project at Narora in Uttar Pradesh is to be set up by the Department of Atomic Energy. The achievements of this project will accrue in Sixth Five Year Plan. The construction of the prototype 40 MW Fast Breeder Thermal Reactor (FBIR) at Kalpakkam is being undertaken by the Atomic Energy Commission. Plutonium and thorium are to be used as nuclear fuel. The Commission proposes to prove the prototype during the Fifth Plan and develop large capacity reactors (500 MW) during 1980s.

India is embarking upon an active plan for development of non-conventional sources of energy for electrical power generation. In the context of current developing energy crisis in the world, it has become necessary to exploit other natural resources, such as, geo-thermal energy, wind energy, and tidal power for power. At present, detailed proposals for a programme for the development of technology and equipment as well as a programme for exploratory work for selecting appropriate locations for such power development schemes is proposed to be taken up in an organised manner.

Realising the magnitude of rural electrification programme from the view point of transformation of rural life, increased agricultural production and development of rural industries, special emphasis is laid on the successful implementation of the programme. From merely 3600 villages in 1951, the number of electrified villages by the end of 1973 reached 148,000, covering 26.2 per cent of the total villages in India. The Fourth Plan programme in the field mainly concentrated on energisation of irrigation pump sets/ tube wells. Pumpset energisation target during the plan period was set at 1.25 million numbers at an estimated outlay of Rs. 4446.50 million. At the end of 1973, there were 2.35 million energised pumpsets in India. In terms of Fourth Plan achievement in these fields (upto 31st December 1973), 74539 villages were electrified and 1.26 million pumpsets were energised. It is estimated that by the end of the Fourth Plan, about 150,000 villages would be electrified and 2.45 pumpsets would be energised.

COAL BASED FERTILISER PLANTS

Two coal based fertiliser plants of the Fertiliser Corporation of India at Ramagundam and Talcher are expected to be mechanically completed by July 1975 and are likely to start commercial production by January 1976. The third coal based plant at Korba is to be ready by July 1977.

There are 11 major projects of the Corporation now under implementation. When completed and commissioned, these would develop an additional capacity of about 1.5 million tonnes of Nitrogen and 243,000 tonnes of phosphate. The Corporation has at present five operating units at Sindri, Nangal, Trombay, Gorakhpur and Namrup with a total capacity of 386,000 tonnes of Nitrogen and 36,000 tonnes of phosphate.

While Ramagundam, Talcher and Korba would be based on coal as feedstook, the Haldia, Nangal expansion and Sindri modernisation projects would be using fuel oil.

The work on the Haldia fertiliser plant is expected to be completed by March 1976 and the unit is likely to commence production by October the same year.

The Nangal Expansion project, now under implementation is likely to go into production in April 1976. The project, which is being implemented with $ 58 million assistance from the World Bank, would be based on fuel oil reducing Nangal's dependence on power from Bhakra from 164 MW to 36 MW.

The operating units of the Corporation during 1972-73 produced 294,000 tonnes of Nitrogen which was marginally less than the total Nitrogen production in the previous year. Production was affected primarily by non-availabily of enough power at Nangal, power cuts, voltage dip etc. at Gorakhpur and power failures or power shutdowns at Namrup, resulting in loss of production estimated at 45,800 tonnes of Nitrogen.

Despite production constraints, the Corporation earned, during 1972-73, Rs. 199.20 million profit as against a profit of Rs. 163.80 million during 1971-72.

PRESSURE-SENSITIVE ADHESIVE DEVELOPED

The Regional Research Laboratory (RRL), Jorhat, has successfully developed a pressure-sensitive adhesive which can be used in 'self-adhesive' articles like envelopes, photo albums and stamp albums. Mere application of finger pressure would suffice to make the articles stick, and the articles can be easily relieved without damage to the smooth surface of the albums.

At present, some kind of glue or other such material which requires activation by water, solvent or heat is still largely used in India for sticking envelopes and photographs in albums. Pressure-sensitive adhesives are widely used in foreign countries but have not yet become popular in India.

The RRL process consists in mixing and heating the raw materials, coating the mixture on a base paper and air-drying. The coated papers are covered with release alkathene sheets and bound into suitable sizes.

The main raw materials required for making the pressure-sensitive adhesive are base paper, alkathene sheets and adhesive materials. The main equipment required are electric mixer, hot plate and coating machine.

PROCESS FOR STRAWBERRY ALDEHYDE

The Regional Research Laboratory (RRL), Jorhat, has successfully developed a process for the production of strawberry aldehyde, which is widely used in perfumery industry for the manufacture of agarbatti (incense sticks). At present, bulk of the requirement is met through imports.

The RRL process consists in the condensation of acetophenone and ethyl chloroacetate under basic conditions. Yields of 50-60 per cent on laboratory scale are obtained.

The main raw materials required for the production of strawberry aldehyde are acetophenone, ethyl chloroacetate, sodium metal alcohol and benzene. All these are available indigenously. The main equipment required include glass reflux unit with a heating mantel, stainless steel reaction vessel with internal cooling coil and agitator, cooling plant, benzene extractor, separator, evaporator, storage tanks and vacuum units and pumps. All the equipment can be fabricated easily.

FLEXIBLE MAGNETS FOR REFRIGERATOR DOORS

The National Chemical Laboratory (NCL), Poona, has developed a process for the production of flexible magnets which are at present mainly used in refrigerator door gaskets. They also find application where cost is the main consideration and where low energy product can be tolerated.

Such magnets are not presently manufactured in India. Hence their demand has not grown to the full extent. The estimated requirement of the product in India is about 2 million feet of various widths.

The NCL process consists in hot-rolling required quantities of binder and lubricant with continuous addition of ferrite till the mass becomes homogenous. The lumps are pulverized and hot-extruded to the required dimensions. The strip is surface-magnetized to impart maximum attraction and holding power.

The process has been developed on 500 g per batch scale. Extrusion has been carried out in small pieces of 1-2 ft. length. The flexibility, hardness and other physical properties match with those of the imported samples.

A unit capable of producing 1 million feet (1 cm. width and 2 mm. thickness) of magnets per annum has been taken as the economically viable capacity of the plant.

INDUSTRIAL MACHINERY AN OUTLOOK

The consistent uptrend in the production and diversification of industrial machinery in recent years has enabled India to lead the list of developing economies in this line of manufacture. In the post-Independence period, the economy developed a sound base for the manufacture of a wide range of sophisticated machinery required for quickening the pace of its industrialisation. The industrial machinery sector, in fact, has not only saved large sums of foreign exchange by way of import substitution but earned sizeable foreign exchange through exports.

The diversified range of industrial machinery, today, covers almost all types of machinery required for industrial growth, particularly suitable to the needs of developing economies. Although the range of machinery covers a wide field of industrial activity, mention may be made of sugar mill machinery, steel plant equipment, tea processing machinery, paper and pulp machinery, textile machinery, jute machinery, printing machinery, cement machinery, conveyors, industrial chains, lifts and cranes, rayon and synthetic fibre plants and equipment, metallurgical machinery, coal mining and washery plants, dairy machinery, ceramic machinery, rubber machinery, chemical and pharmaceutical machinery, boats and crafts/ships repair machinery, transmission line tower machinery and light, medium and heavy structural machinery.

India's *sugar mill machinery* sector has a well established infrastructure. The industry has the capability of manufacturing complete sugar plants of 1250/2000 tonnes per day and even higher cane crushing capacity. Some of the units are capable of manufacturing sugarcane/beat diffusion plants. The licensed/registered capacity of the industry is of the order of 20 complete plants while for individual items of sugar mill machinery in terms of value, it is Rs. 75 million. The current effective installed capacity for the manufacture of sugar machinery including complete plants is estimated at Rs. 250 million. The production during 1973 is estimated at Rs. 200 million as compared to Rs. 180 million in 1972. In 1972, the capacity utilisation of the industry was of the order of 78 per cent.

Keeping in view the anticipated increase in the requirement of sugar during the Fifth Plan, the Government is taking effective measures to augment production of sugar mill machinery. The import content in the manufacture of the machinery is roughly 10 per cent and limited to some specific bought out items, such as, hydraulics, ball and roller bearings of special type and centrifugal screens.

Some units in the line have even started exporting complete sugar plants on turnkey basis. In this regard mention may be made of M/s. Walchandnagar Industries Limited, Bombay (secured turnkey assignment from Uganda), M/s. Larsen and Toubro, Bombay and M/s. Phaltan Sugar Works, Bombay. During 1972-73, the industry's export earning totalled Rs. 11.80 million as against Rs. 11.05 million in 1971-72, Rs. 0.50 million in 1965-66 and Rs. 1 million in 1960-61. Uganda, Malaysia, Federal Republic of Germany, Nigeria, Liberia and Ghana are the leading buyers.

Textile machinery is yet another manufacturing field in which India's technical expertise reached an optimum level. The industry, in recent years, has achieved significant strides in production. The output of machinery and components which was of the order of Rs. 243.80 million in 1968 reached an all time high at Rs. 683.30 million in 1972. During the first 9 months of 1973 (January-September 1973), it was estimated at Rs. 510 million. The installed capacity in respect of complete machinery is of the order of Rs. 1170 million while the licensed capacity is placed at Rs. 1280 million. The production profile of the industry covers the complete range of spinning, weaving and processing machinery of high quality. Many of the units in the field have foreign collaborations with the most renowned textile machinery manufacturers abroad.

Alongwith production, the industry is also active in the field of exports. During 1972-73, textile machinery brought in foreign exchange at a value of Rs. 43.25 million. Czechoslovakia, Bangladesh, Indonesia, Libya, Arab Republic of Egypt, Sudan, German Democratic Republic and Poland were the significant buyers. During the first 6 months of 1973-74 (April-September 1973), the exports earned Rs. 20.35 million. Sweden, Switzerland, German Federal Republic, U.K. and Netherlands were the prominent destinations.

A vital sector responsible for rapid industrial development, *the steel plant equipment manufacturing industry* has indeed recorded significant progress in production. Presently, there are 3 units engaged in the production of steel plant equipment. Of these, 2 are in public sector and 1 in the private sector. The industry's total production during 1973 was estimated at Rs. 180 million as against Rs. 156 million in 1972. M/s. Heavy Engineering Corporation, Ranchi and M/s. Triveni Structurals, Naini, (Allahabad) are the two public sector units with an annual installed capacity of 80,000 tonnes and 2,000 tonnes respectively. The output range of the Ranchi unit comprises various types of steel plant equipment like, coke oven equipment, blast furnace equipment, rolling mill equipment, ladle cars and pig casting machines while that of the Naini unit covers cubicles, blast furnace and plate work. The unit in the private sector M/s. Utkal Machinery Limited, Kansbahal which has an annual installed capacity of 12,000 tonnes, manufactures a wide variety of industrial machinery including mining. Currently, Ranchi and Kansbahal unit are in production.

In the field of *paper and pulp machinery*, the production on regular basis commenced only in 1960. With 18 units in its infrastructure, the industry has a licensed capacity of nearly Rs. 442 million while the total installed capacity is of the order of Rs. 146 million. The manufacturing capacity of the industry has been classified into four categories viz. small plants upto 20 tonnes per day capacity; medium paper plants of 50 tonnes per day capacity; large size plants of 150/200 tonnes per day capacity and miscellaneous items of paper machinery like fourdrinier wire cloth and brown stock washers. One of the units in public sector, M/s. Jessops and Company, Calcutta, have recently undertaken manufacture of pulp and paper machinery in technical collaboration with Switzerland. The firm will mainly produce large sized paper plants. During 1973, the industry's production of paper machinery was estimated at Rs. 45 million. Import of paper and pulp machinery has been banned in India taking into account the development of indigenous capacity in this field. Besides meeting home demand, the industry, in recent years, have even exported some items of the machinery. During 1972-73, the exports were of the order of nearly Rs. 1 million as against Rs. 0.35 million in 1971-72. Japan, Kenya, Korea Republic, Thailand and Hungary constituted the principal importers during 1972-73.

Chemical and pharmaceutical machinery is currently being manufactured in India in the organised sector by 63 units. Of these, 60 are in the private sector and 3 in public sector. In the private sector, the capacity in terms of value is of the order of Rs. 595.50 million while in the public sector, it is 26,271 tonnes in terms of quantity. During 1973, the production of the industry was estimated at Rs. 300 million as against Rs. 260 million in 1972. The production range of the industry covers altogether diverse type of plants - sulphuric acid plants, superphosphate plants, water treatment plants, solvent extraction plants, fatty acid plants, alcohol plants and number of miscellaneous plants and equipment, such as, pressure vessels and heat exchangers.

During the Fifth Five Year Plan, the demand for heat exchangers, pressure vessels and other heavy fabricated equipment has been estimated at 375,000 tonnes (inclusive of export demand estimated at 14,000 tonnes) during 1977 to 1979 by the Task Force of the Ministry of Heavy Industry.

The capacity utilisation in the industry during 1972 was of the order of nearly 90 per cent. Till the end of 1972, the total capacity installed was worth Rs. 637 million The industry has further diversified its production range by undertaking manufacture of equipment required for nuclear power projects. Certain nuclear equipment sponsored by the Atomic Energy Department have now come to be manufactured by some units in the line.

With a capacity to manufacture 18 complete cement plants a year in the range of 600 to 1200 TPD, the *cement machinery* sector has registered significant strides in production. The recent years have witnessed the industry exporting the machinery and even securing turnkey orders from abroad. Based on both the processes - wet and dry, 10 units in the line, manufacture various other machinery items also. Utilising the indigenous knowhow, some of the existing units have built up capacity to supply shaft kiln plants in the range of 30 to 200 TPD. During 1973, production of cement mill machinery has been estimated at Rs. 63.50 million as compared to actual production in the preceding year at Rs. 22 million. The total capacity installed in terms of value till the end of 1972 was of the order of Rs. 260 million. India has attained self-sufficiency in this line of manufacture. Besides, the industry is in a position to increase the capacity sizeably in order to meet further increase in the demand for cement. The industry has already entered into export field. During 1972-73, exports in cement and asbestos cement plants including concrete vibrators were in the neighbourhood of Rs. 23 million. Iraq was the leading buyer of cement making machinery. Concrete mixers were mainly supplied to Arab Republic of Egypt, Malaysia and Nepal while other concrete equipment were exported to Arab Republic of Egypt.

Tea processing machinery industry has contributed sizeably in developing tea industry in India. The installed capacity of Rs. 29 million in terms of value is spread over 6 units in the field. The production of the machinery covers almost the entire range of equipment required for tea processing. Among these, LTP machines, CTC machines, tea rollers, tea breakers are important. Owing to indigenous availability of the machinery, imports are not encouraged. The units are capable of fabricating machinery even against large orders. During 1972, the production was valued at Rs. 11 million. The output level during the preceding years was more or less constant. The production mainly depends upon the orders received by the units. The industry also entered the export field in recent years. For instance, during 1972-73 the export earning of the industry was of the order of Rs. 1.7 million. During the year, tea leaf cutting machines were supplied to Kenya, Libya, Tanzania Republic, Iran, Sri Lanka, Mauritius and Bangladesh.

In the field of *jute mill machinery* also, India has reached a stage of self-sufficiency. The bulk of requirements of main items of the machinery are manufactured indigenously. Considerable progress has also been achieved in the field of ancillaries and components required for fabrication of main items of machinery. The production of 40 units in the line in 1973 was estimated at Rs. 84 million as against Rs. 67.60 million in the preceding year. Various measures are being taken to step up the present level of production as also to set up new units to meet the urgent needs of home markets as well as to spare for export.

Recently, a letter of intent has been issued to an engineering unit for manufacture of jute modernisation equipment. The production has already been started by the unit with a negligible import content. Another unit, M/s. Textile Machinery Corporation of Calcutta was also granted a licence by the Government for manufacture of cop winding machines for the jute industry. Serious efforts are also being made to develop new items with research and development activities. The new items currently being developed include complete jute spinning frames, roll winders, ring traveller spinning frames and pot spinning.

With an estimated production of Rs. 12 million in 1973, *printing machinery* sector has registered nearly 33 per cent increase over the production in 1972 at Rs. 9.30 million. The production in this area mainly depends upon the amount of orders received by the units. There are in all 19 units manufacturing the machinery, including a unit in public sector, namely, M/s. Hindustan Machine Tools (HMT). The output range in the field includes offset printing machines, cylinder printing machines, rotary machines, platen presses and paper cutting machines. During 1972-73, exports of printing and book-binding machinery were of the order of Rs. 0.70 million.

Rubber machinery manufacturing industry is rapidly growing in India owing to increasing domestic demand. To cope up with the demand, the annual target of capacity has been placed at Rs. 250 million during the Fifth Plan as against Rs. 150 million per year during the Fourth Plan. To bridge the gap between the existing capacity and estimated demand, some fresh schemes have been sponsored and addition of a capacity of Rs. 181 million has been approved. At the end of 1974, production level is expected to be of the order of Rs. 50 million every year as against the present level of Rs. 10 million. Special emphasis is laid by the Government on the manufacture of automotive tyre and rubber goods machinery.

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With capacity utilisation worth 66 per cent, the *dairy machinery* industry has attained capability to design and engineer dairy product plant of medium and large capacity. The industry can even take up manufacture and supply of various items of dairy machinery on turnkey basis. The technology in the field can even fabricate and supply automatic milk bottling plants. Currently, there are 5 units producing dairy equipment. Their production during 1972 was valued at Rs. 37 million. In the following year also, the production was more or less the same.

Besides the above machinery sectors, a number of other industries in the line include coal mining machinery and coal washery plants, ceramic machinery, metallurgical machinery (other than steel plant equipment). rayon and synthetic fibre plants and machinery, industrial chains, cranes and lifts, conveyors and agricultural machinery.

Three major aspects of industrial machinery manufactured in India relate to product-diversification, fuller capacity utilisation and improvement of indigenous content. With a view to expanding the extent and range of production, Indian Government has been endeavouring to create fresh manufacturing capacities and expand existing capacities. In 1972 alone, 41 industrial licences and 74 letters of intent were issued to various industrial units to this end. The Government of India is also encouraging units to undertake the production of related items besides their main line of production with suitable changes in the design and engineering inputs. Such diversification in their manufacturing activity helps the units to utilise their capacities in a fuller manner. Lastly, import content is sought to be reduced to the minimum and today the manufacturers of prominent industsial machinery in India can be proud of achieving high indigenous ratios in their total input quantum. For instance, the indigenous content in sugar mill machinery is as much as 92 per cent, for building and construction machinery 90 per cent, tea processing machinery up to 92 per cent, rubber machinery 10 per cent (in respect of items being manufactured in the country), for tobacco machinery up to 93 per cent, paper and pulp machinery 65 to 70 per cent and chemical and pharmaceutical machinery 70 to 80 per cent. ☐

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BEL BAGS EXPORT ORDER FOR RADARS

Testifying to the growing popularity of India's sophisticated electronic products in foreign markets, M/s. Bharat Electronics Ltd. (BEL), Bangalore, have recently bagged a substantial export order for supply of a large number of radars for weapon systems.

The payment against the order, valued at as much as Rs. 170 million, will be received in hard currency. More significantly, the contract has been concluded with M/s. Contraves of Switzerland who are themselves leading manufacturers of radars. The supplies against the contract will start from 1976 to be completed within a span of three years.

BEL entered the export field in 1968-69 with a modest foreign exchange earning of Rs. 0.5 million against supply of electronic components. Their earning has since been growing to reach a level of Rs. 10.60 million in 1972-73. Currently, BEL is making a determined bid to make a breakthrough in highly competitive markets of West Germany, United Kingdom, United States, Canada and Switzerland.

The firm's production value which was of the order of Rs. 39.6 million in 1963-64, progressively rose to Rs. 391 million during 1972-73.

INDIAN FIRM PROVIDES CONSULTANCY SERVICES ABROAD

Comparatively a late entrant to the field of industrialisation, the Indian economy has today acquired requisite technical expertise and maturity to undertake even consultancy assignments at home as well as abroad. Among the successful organisations providing consultancy services to other countries, the achievements of M/s. M. N. Dastur and Co. (Dasturco) deserve notice. Originally, the firm specialised in the metallurgical field. To-day, they provide consultancy services in diverse fields, such as, iron and steel, ferro-alloys, alloy and special steels, mining and mineral processing refractories, chemicals, light and heavy engineering plants, power generation, nuclear fuels and industrial structures. The company and its overseas subsidiary, Dastur Engineering International GmbH (DEI) Dusseldorf, have so far handled over 200 assignments for a total value of US $ 7,200 million. These assignments include ore mining, benefication and pelletisation, pig iron plants, integrated steel plants, alloy and special steel plants, mini-steel plants, ferro-alloys, foundries and metal working plants, non-ferrous metals, minerals and refractory plants, chemicals, fertilisers and nuclear fuel plants and financial and economic studies.

The major specific assignments undertaken abroad by Dasturco include feasibility reports on iron and steel complex in Tripoli (Libya) and the jobs assigned by UNIDO, Vienna in respect of first integrated steel plant in Syria and the ferro and alloy plants in Iran. They are also entrusted with technical and economic feasibility study on better utilisation of existing steel-melt shop of Zenica Steel Works in Zenica (Yugoslavia). The other assignments include technical consultancy for revamping of Thomas converter shop of Helwan Iron and steel plant (Arab Republic of Egypt); a comparative and critical demand study on steel and alloy steels in Iran; engineering report for the Sri Lanka Steel Corporation on expansion of steel making continuous casting facilities in Sri Lanka; engineering sevices for the new rolling mills and improvement of existing operations for the Rolling Mill Project in Bangkok (Thailand); Inter-regional ferro-alloy feasibility study for Cambodia, Laos, Thailand and Republic of Vietnam and advice on modernisation and expansion of mill facilities in Rolling Mill in Mauritius. The company has been associated (dating back to earlier Fifties) with iron and steel project in Peru and Venezuela since early Fifties. Currently it has been entrusted with study on the economies of scale in Latin American countries for steel plants-sizes varying from 25,000 to 300,000 tonnes per year by the United Nations Economic Commission for Latin America.

In addition to the assignments abroad, the company has received several consultancy assignments within India too. These relate to alloy steel plant at Durgapur, Bokaro Steel Project; Mukund Iron and Steel Works, Bombay; Salem Steel Plant; Visakhapatnam Steel Project; Steel Complex Limited, Feroke near Calicut (Kerala); Ferro-chrome plant for Ferro-Alloys Corporation Limited; Ferro-silicon plant for Indian Metals and Ferro-alloys Limited; Uranium Milling Plant, Jadugoda; Nuclear Fuels Complex, Hyderabad; Graphite electrodes Plant, Durgapur; Gelatine Plant, Ootacamund; Electrolytic Manganese Dioxide Plant, Bombay and a number of mini-steel plants and rolling mills. In fact, since its inception, the company has been actively involved in the development of steel industry in India.

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Established in 1955, the firm pioneered engineering consultancy in the country and became the first Indian retainer consultants to the Government of India. It has no financial ties with any equipment supplier or contractor in India or abroad. This independent status provides it with objectivity to give impartial technical advice to its clientele.

FROM SOAPS TO AUTOMOBILES

SUCCESS OF AN EXPORT HOUSE

In the context of India's exports, the contribution of M/s. Tata Exports Ltd. (Shivsagar Estates, Annie Besant Road, Worli, Bombay), is noteworthy. From a modest export turnover of Rs. 2.5 million in 1962-63, their foreign exchange earning rose to Rs. 210 million in 1972-73 to touch a peak level of Rs. 240 million in 1973-74. Its cumulative foreign exchange earning, since its inception as an Export House in 1962, amounts to Rs. 1200 million.

Initially directed to a few neighbouring countries, such as, Cambodia and South Vietnam, the exports made bv M/s. Tata Exports Ltd. have now secured a firm foothold in the South East and West Asian markets as well as a number ol African and European markets.

Recent export achievements of the company include supply of steel tubes to USA at a value of Rs. 83.40 million and an order valued at Rs. 4.5 million for sophisticated engineering products to Guyana. The order from Guyana is reported to be India's largest single order for engineering products secured from the South American continent. In 1972 73, the company has succeeded in exploring a new market in New Zealand for Indian commercial vehicles. In fact, it has already bagged a substantial order (worth Rs. 1.5 million) for the vehicles from Guyana, with possibility of concluding further similiar orders in that country. Creditably, during 1972-73, the company also succeeded in increasing its exports of textile and garments to Europe to Rs. 15 million from merely Rs. 7.46 million in the preceding year.

The outstanding export contracts bagged by Tata Exports in the past include the one valued at Rs. 70 million for supply of rails and accessories to the Union of Burma Railways. Further, the company won a turnkey contract for supply and installation of a 230 KV double circuit transmission line in Thailand for a distance of about 100 Kms. Valued at Rs. 12 million, the contract has been secured in the face of stiff competition from Japanese and Italian firms and is currently under execution. Again, as agents of the Government of Qatar for servicing their purchases in India under the commodity agreement between the two countries, Tata Exports have assisted in facilitating India's export promotion.

In the context of their overall export success, Tata Exports is also listed among the first few who pioneered Indian exports on a commercial scale in items like electric cables, steel pipes and conduits, pressed steel tanks, commercial vehicles, bus bodies and other automotive products, passenger railway coaches and accessories, bridge girders, overhead cranes, sluice gates, transformers and switchgears, refractories, pressed tools and fork lift trucks. In the process, they have succeeded in building up India's image as an industrially fast developing country.

The export profile of the company includes a wide range of products so much so that the company has set up separate divisions, each concentrating on export of an allied group of products. Thus, the steel and industrial products division of the company looks after overseas sales of steel bridgework and structures, railway rolling stock and track materials, machinery equipment and raw materials for steel and cement mills, cast iron pipes and fittings, fencing accessories, builders hardware, welding equipment and accessories and several other industrial products largely from Eastern India. Similarly, the Power and Transmission Division is equipped to offer project engineering know-how and supplies of a complete range of electric transmission and distribution equipment from transmission line towers, conductors, insulators and line accessories to switchgear, controlgear, transformers, electric motors and starters, electrical measuring instruments and domestic appliances. The TELCO (Tata Electric Locomotives) Division is engaged in export of Tata trucks and buses as well as excavators while the Voltas Division specialises in export of items like airconditioners, central cooling plants, water coolers and mining machinery. Other divisions of the company pertain to steel tubes, automotive and construction equipment, textiles and garments; consumer commodities like soaps, detergents, shrimps, fruit juices and instant tea; chemicals and yarn products including carded, combed and cabled yarn as well as bicycle tyre cord. In addition, the General Trading Division of the company concentrates on development of new exportable products.

The commodities handled by the company include not only Tata Group products but products of about other 100 reputed manufacturers. Besides facilitating and negotiating export of concerned manufacturers, they are also advising them on quality and packaging improvement as well as assisting them with special market feedback information, booking of forward orders and guidance in procurement of raw materials. With a view to provide a ready show-window for all products offered by it for export, the company has lately set up a modern show-room which has proved popular. They are also inviting foreign trade delegations and other interested parties to India to evoke interest in Indian products. Associates and resident representatives of the company in the U.S.A., Europe, West Asia, Africa and South East Asia are also rendering valuable service in the export interest of the country.

Besides exports of products, the company is also endeavouring to supply plant and equipment in overseas markets. For this purpose, they have a Project Division engaged in identifying areas for turnkey projects and joint ventures abroad and setting up and promotion of export oriented manufacturing units.

HSL'S SHARE IN INDIA'S EXPORTS

India's iron and steel industry earned Rs. 418 million in foreign exchange during 1972-73 as compared to Rs. 409 million in 1971-72. Exports of pig iron, sponge iron, iron and steel powders and ferro-alloys amounted to Rs. 203 million against Rs. 97 million, steel tubes and pipes Rs. 112 million against Rs. 108 million and iron and steel bars, rods, angles, shapes and sections Rs. 72 million against Rs. 108 million. Exports of steel ingots and other primary forms, universals, plates and sheets as also steel wires and rods improved sizeably. The offtake of rails and railway track material, however, declined.

The prominent destinations were U.S.S.R., U.S.A., Japan, Bangladesh, Singapore, Iran, Yugoslavia, Sweden, Philippines, Taiwan, Burma, A.R.E., Indonesia, Kenya, Hong Kong, Thailand, Malaysia, Australia, Czechoslovakia, New Zealand, Iraq, Sri Lanka, U.K., Sudan, Bulgaria and Kuwait.

M/s. Hindustan Steel Limited (P. O. Hinoo, Ranchi, Bihar) is one of the major suppliers of pig iron and finished steel and leading manufacturers of products like hot and cold rolled coils, CR sheets, cold rolled galvanised sheets, cold rolled electrolytic tin plates, large diameter ERW pipes, stainless steel products and sleepers.

In line with the decision taken by the Indian Government to reduce the export volume of iron and steel products for which domestic demand has been high, the value of exports effected by Hindustan Steel Limited, which had reached an all time high of Rs. 530 million in 1970-71 dropped to Rs. 175 million during 1972-73. This included export sale of Rs. 20 million of Bokaro products.

Pig iron accounted for 80 to 85 per cent of the total exports made. New markets in Taiwan and Philippines were developed during the year. Besides an earlier order for 500,000 tonnes, a further order for 233,000 tonnes was booked for export to the U.S.S.R. Exports of pig iron amounted to 406,700 tonnes, including 5,140 tonnes shipped by Bakaro against the contract signed by HSL as their agent, and also 62,100 tonnes purchased by HSL from Bakaro. Exports during the previous year were 218,100 tonnes.

About 40,000 tonnes of structurals were shipped to the U.S.S.R. during 1972-73.

In regard to rails, 4,400 tonnes were shipped to A.R.E. during the year. Orders for 25,000 tonnes were secured for shipment to Iran and South Korea during the year 1973-74 against global tenders.

A quantity of 2,900 tonnes of galvanised corrugated sheets was despatched to Bangladesh in addition to 750 tonnes shipped in the previous year.

Among HSL's pioneering efforts, the most important has been the successful development of markets abroad for a sophisticated product like rails against stiff competition from advanced countries. For the export of bars and structurals, HSL's efforts have been equally significant.

Steel production witnessed an upward trend in 1972-73. The output of saleable steel by major steel producers in the country stood be 4.79 million tonnes in 1972-73. Of this, the HSL produced 3 million tonnes of saleable steel accounting for 62 per cent. In ingot steel production, HSL Plants crossed the 4 million tonnes mark.

HSL has a record in the context of import substitution. Technical officers with knowledge of requirements of Plants have been posted by the HSL at important industrial centres e.g. Calcutta, Bombay, Delhi, Kanpur and Madras to assist and guide the industrial entrepreneurs for the development of indigenous substitutes and also to locate the indigenous sources for items hitherto imported. Import substitution groups are working in all plants of HSL and some import substitutions have been developed in Bhilai, Durgapur and Rourkela Steel Plants.

HSL was nominated as a canalising agent for importing steel materials for organised sector like tubemakers, refineries, furniture makers and auto makers. Besides the canalised items of steel, the company also imported non-canalised items like structurals for Government departments and various other projects. Orders were placed during the year for a total of 900,000 tonnes of products at a CIF value of Rs. 1,108 million, actual receipts amounting to 650,000 tonnes valued at Rs. 1,025 million. During the previous year, steel materials worth Rs. 710 million (CIF) had been ordered for and materials worth Rs. 663 million were received. The deliveries during 1972-73 amounted to Rs. 1,025 million as compared to Rs. 677 million during 1971-72 and Rs. 156 million in 1970-71.

HSL has also set up a Steel Bank on Government account. To start with, imports were arranged for 4,710 tonnes of boiler plates, 639 tonnes of stainless steel sheets and plates, 3,940 pieces of carbon steel and stainless steel flangs, 9,510 metres of seamless pipes and 84 tonnes of stainless steel tubes. It terms of value, purchases amounted to Rs. 20.5 million and sales to Rs. 5 million during the year.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT TRADE IN MANGOES

Indian mangoes had an export market worth Rs. 5 million (1810 tonnes) during 1972-73. Kuwait purchased worth Rs. 2 million, U. K. Rs. 1.52 million and Bahrein Islands Rs. 0.44 million. Dubai, Qatar and Muscat were the other important buyers. Besides these main markets, India has also exported some quantities of the fruit to Afghanistan, Iran, Italy, Lebanon, Malaysia, Nepal, Netherlands, Poland, Yemen, Singapore, Somalia, Sweden and Switzerland.

In the first seven months of 1973-74 (April-October, 1973), the export of mangoes fetched Rs. 4.6 million (1500 tonnes). Kuwait absorbed worth Rs. 2.6 million while Dubai's purchase value was nearly Rs. 1 million.

That India's export trade in the fruit has improved over the recent years is evident from the fact that in 1970-71 and 1971-72, the foreign exchange earned was around Rs. 2.6 million only while it has doubled in the year 1972-73 and is heading for substantial improvement in the subsequent year.

The State Trading Corporation of India has been endeavouring to export mangoes on a consignment basis in order to popularise the consumption of the fruit in the West European countries. The 'Alphonso' variety of mangoes has received special acceptability amongst overseas buyers. The season of this variety being short, STC is also exporting other varieties, such as, 'Dusseri', 'Chausa' and 'Langra' which start coming in just when the 'Alphonso' season ends.

Mango is the king of Indian fruits. It occupies two-thirds of the area under fruit cultivation in the country (0.7 million hectares). The estimated production of the fruit in a year is of the order of 7 million tonnes.

A centrally sponsored scheme for a package programme for exportable varieties of mangoe has been formulated to be taken up during the Fifth Five Year Plan in India. The major emphasis will be on the production of the Alphonso variety which is in high demand, both in fresh and processed forms. The other varities included under the scheme are 'Totapuri', 'Benganpallis' and 'Fazli'. Under the scheme, it is proposed to intensify standardized production as also increase yields of existing gardens. The area to be commissioned under the package programme and new plantings during the Fifth Plan would be 40,000 hectares and 12,000 hectares respectively.

KERALA STATE'S CONTRIBUTION TO EXPORTS

The State of Kerala contributes substantially to the overall foreign exchange earnings of the Indian economy. Export industries of the State mainly comprise coir, cashew, spices and handloom as also new enterprises, such as, marine products, minerals and plywood. The value of the traditional items constitutes more than 70 per cent of the total export earnings of Kerala which account for over 14 per cent of the export earnings of India, according to the Economic Review of Kerala (1973), recently published by the Government of Kerala.

Though a non-traditional category, marine products occupy an important place in India's external trade, having earned Rs. 597.20 million in foreign exchange during 1972-73 compared to Rs. 445.50 million in the preceding year. In these years, the quantum of marine products exported by the country was 38,903 tonnes and 35,523 tonnes respectively. In respect of Kerala, the marine product exports reached the peak of 25,800 tonnes valued at Rs. 419 70 million in 1972-73 as against 21,890 tonnes valued at Rs. 337 million in 1971-72. Thus, Kerala contributed over 66 per cent in terms of quantity and over 70 per cent in terms of value of all India exports of this item.

Improvement in frozen shrimp exports was mainly responsible for the overall increase in the marine product export trade. Frozen froglegs, canned prawns, shark fins and fish maws also contributed to the increase in the export trade. Frozen sea food like shrimps, froglegs, lobster tails and fish put together continued to dominate, sharing 86.4 per cent in terms of quantity and about 92 per cent in terms of value of the country's total exports of marine products (1972-73).

The export of spices from India was of the value of Rs. 291 million (45,290 tonnes) in 1972-73. From the State of Kerala, the quantum of spices exported during the year was 26,264 tonnes at a value of Rs. 181.22 million. Thus the percentage of Kerala's exports of spices to India's total exports was 58 per cent in terms of quantity and 62.4 per cent in terms of value during 1972-73. In 1971-72, these percentages were 39.6 and 52.8 respectively.

Pepper constitutes the major variety of spices. Total exports from India in 1972-73 stood at Rs. 143 million (19,958 tonnes) of which Rs. 141 million (19,695 tonnes) emerged from the State of Kerala. In other words, the share of Kerala in India's total exports of pepper was about 98.6 per cent, both in terms of value and quantity. The contribution of Kerala exporters was as much as 30 per cent in terms of quantity and 28.3 per cent in terms of value in India's overall exports of cardamom (small) during 1972-73. In ginger, Kerala contributed in the year around 73 per cent while it was around 22 per cent for turmeric.

The share of Kerala in the all India exports of cashew kernels worked out to 98.6 per cent during January-September 1973. It was a little over 90 per cent in respect of cashew nutshell liquid exports.

The State of Kerala enjoys monopoly in respect of export trade in coir and coir products. The important coir products exported are coir, yarn and mattings, coir fibre, and curled coir. During April-October 1973, the export of coir and coir products was of the order of Rs. 77.8 million.

In reference to India's export trade in coffee and tea also, Kerala makes no mean contribution.

Some of the Government owned companies in Kerala too play a notable role in the context of India's export trade. Messrs Kerala Minerals and Metals Limited produced ilmenite (15,130 tonnes in 1972-73), rutile (1410 tonnes), zircon (356 tonnes), sillimenite (5210 tonnes), leucoxene (185 tonnes) and monazite

(292 tonnes). Its sales turnover was worth Rs. 2.5 million during 1972-73 including the value of minerals exported to Japan and U.K. and other countries of Europe. M/s. Travancore Titanium Products Limited is the manufacturer of titanium dioxide pigments. Its production is sought to be raised from 6,000 tonnes per year to 24,000 tonnes per year soon. This will help the unit not only to meet the entire national demand but also to undertake substantial exports.

Of the Central Government units in Kerala, M/s. Fertilizers and Chemicals Travancore Limited make an important contribution to the country's industry and trade. During 1972-73, the unit produced 95,946 tonnes of ammonium sulphate, 54,504 tonnes of ammonium phosphate, 21,260 tonnes of superphosphate, 80,270 tonnes of ammonium chloride, 1,530 tonnes of sulphur dioxide as well as ultrafos.

M/s. Hindustan Insecticides Limited and M/s. Hindustan Machine Tools Limited are among the other central units in Kerala that are adding to the Indian economy's programmes of industrialisation and export promotion.

LIBYA - A FAST DEVELOPING MARKET FOR INDIAN GOODS

India's share of the Libyan market has been on the rise. In 1961-62, its exports to Libya amounted to a mere Rs. 4 million, comprising mainly tobacco and spices. There was an upward trend subsequently and the exports reached Rs. 18 million in 1971-72. In 1972-73, the exports almost doubled to Rs 35.5 million. In 1973-74, the rising trend continued, during the first seven months (April-October 1973), the export amounted to Rs. 32 million which was again double of the level of Rs. 16 million in the corresponding period of the previous year.

The composition of exports has also undergone considerable diversification. Whereas at the beginning of Sixties, the major items were tobacco, spices and ready-made garments, supplies of manufactured products, mainly machinery accounted for 60 per cent of the total exports to Libya in 1972-73. In 1973-74, the major items of exports were steel pipes, structural steel, man-hole covers, textile machinery and accessories, aluminium conductors, towers, control switchgears, cables, diesel pumping sets and the traditional items tobacco, tea, jute bags, spices, handicrafts and textile fabrics.

India has recently made a breakthrough in the supply of drugs and pharmaceuticals to the Libyan market. The orders have been placed on Indian firms, pursuant to State Trading Corporation of India's participation in global tenders invited by the Libyan Government.

The Indian Embassy in Libya had reported earlier that the State Trading Corporation has also secured orders for the supply of woollen blankets and that the Libyan Government evinced interest in importing buses and other vehicles from a reputed manufacturer in Bombay. India-made steel bars, leather goods, EPNS ware, builder's hardware and glazed tiles were also reported to raise curiosity among Libyan buyers.

A textile mill complex is under execution in Libya with the assistance of India's Star Trading Company (Bombay). India's National Industrial Development Corporation Ltd. (New Delhi) has also undertaken project engineering and turnkey consultancy services for industrial projects in Libya. M/s. Kamani Engineering Corporation, Bombay has undertaken a turnkey project in Libya for the manufacture and erection of transmission line towers for a distance of 300 km. in Tripolitaria area. Among other consultancy services offered by India is the job undertaken by M/s. Dastur and Co. of India to prepare a feasibility report on a steel plant in Libya.

With the growing realization among Libyan Government and business circles of India's competence to supply equipment and know-how as also in view of the recent introduction of a monthly sailing service between the two countries (under the auspices of Shipping Corporation of India), Indo-Libyan commercial contacts point out clear prospects for the future.

STEADY TREND IN TOBACCO EXPORTS

Indian exports of unmanufactured tobacco were up at Rs. 642.80 million in 1973-74 as against Rs. 610.70 million in 1972-73. The quantum of supply was 71,243 tonnes during 1973-74 against 94,484 tonnes in 1972-73, indicating more unit value realisation.

United Kingdom was the largest buyer having imported worth Rs. 294.45 million (26,111 tonnes) during 1973-74. It increased its intake sharply from its preceding year's purchases at Rs. 122.75 million (14,873 tonnes). It replaced USSR, which constituted the leading buyer in 1972-73 at Rs. 293.97 million. During 1973-74, USSR, purchased worth Rs. 177.78 million (17,318 tonnes). Bangladesh maintained its position as the third important importer having bought worth Rs. 57.27 million (10,017 tonnes). However, its imports during the year curtailed sharply as compared to Rs. 90.78 million (24,070 tonnes) last year. Japan's purchases totalled Rs. 48 million (4491 tonnes) as compared to Rs. 44 million (4476 tonnes). Irish Republic more than doubled its intake to Rs. 23.96 million (1998 tonnes) from its previous year's purchases at Rs. 11.21 million (1216 tonnes). Libya also imported more at Rs. 6.30 million (540 tonnes) as compared to only Rs. 2.73 million (261 tonnes). Among other buyers, Belgium, Czechoslovakia, Netherlands and Indonesia were significant.

Hungary, France, Sweden, German Democratic Republic, Saudi Arabia, South Yemen People's Republic, Yemen Arab Republic, Singapore, Hong Kong and Somalia were the specific destinations which imported less during 1973-74 as compared to their purchases last year.

EXPORT POSITION OF COIR AND COIR GOODS

India's exports of coir and coir goods were of the order of 41,150 tonnes valued at Rs. 135.8 million during the first eleven months of 1973-74 as against 44,787 tonnes valued at Rs. 134.7 million during the corresponding eleven months of 1972-73. This reveals not only an increase, though marginal, in the export value, but also her unit value realization.

Itemwise, coir mats exports registered an upward trend in terms of value. During the period under review, the exports of this item were placed at 11,156 tonnes valued at Rs. 51.14 million as against 11,465 tonnes valued at Rs. 47 million during the corresponding eleven months of 1972-73. U.K., U.S.A., Italy, New Zealand, Federal Republic of Germany, Canada, U.S.S.R., Czechoslovakia, Japan and Greece were the leading destinations.

Coir mattings is another item, the export of which was quite encouraging. Their export during the first eleven months of 1973-74 aggregated to 2,318 tonnes valued at about Rs. 9 million as against 1,812 tonnes valued at Rs. 6.7 million during the corresponding period of 1972-73.

Export of curled coir increased substantially, 1,108 tonnes of curled coir valued at Rs. 1.4 million were exported. The comparable figures during the corresponding period of the previous year were 663 tonnes and Rs. 0.8 million.

Coir rope exports during the period were 126 tonnes valued at Rs. 0.25 million as against 104 tonnes valued at Rs. 0.16 million during the corresponding period.

India exported 31 quintals of rubberised coir goods valued at Rs. 39,668 during the first eleven months of 1973-74 as against only one quintal valued at Rs. 1,073 during the corresponding period of the previous year. Australia alone accounted for 24 quintals valued at Rs. 32,000.

The export of coir yarn from India during the period April 1973 to February 1974 amounted to 25,538 tonnes valued at Rs. 70.6 million as against 28,765 tonnes valued at Rs. 73.5 million during the corresponding period of the previous year, showing a marginal decline of 3,227 tonnes in terms of quantity and about Rs. 3 million in terms of value. The major destinations were France, U.S.A., Netherlands, Italy, Belgium, Federal Republic of Germany, U.K., Poland, Democratic Republic of Germany, Czechoslovakia and Australia. 570 tonnes of coir yarn valued at Rs. 1.65

million were supplied to Czechoslovakia during this period whereas there was no export of coir yarn to this country during the corresponding period of the previous year.

The exports of coir rugs and carpets, coir fibre and other sorts witnessed decline, both in terms of quantity and value during this period as compared to the corresponding first eleven months of 1972-73.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PROGRESS OF HEAVY ELECTRICAL UNIT

India's heavy electrical sector is making rapid strides in production and exports. The achievement of public sector units in these fields is indeed noteworthy. The example of M/s. Bharat Heavy Electricals Limited (BHEL), deserves special mention in this context.

The year 1973-74 has turned out to be a year of achievement for this public sector unit in which the output turnover reached an all time high level of Rs. 2280 million. Registering 62 per cent increase over the output in the preceding year at Rs. 1410 million, BHEL also outstripped their output target for the year by Rs. 220 million.

All the four units of BHEL registered impressive increase in the production during the year as compared, to that in the last year. The Bhopal unit produced worth Rs. 770 million (1973-74) as compared to Rs. 568 million (1972-73) and registered 36 per cent increase while the Hardwar plant achieved production at Rs. 440 million against Rs. 231 million at an increase of 90 per cent. The Hyderabad unit more that doubled its output to Rs. 451 million from only Rs. 215 million, registering 110 per cent increase while Tiruchi unit improved it to Rs. 651 million from its earlier level of Rs. 431 million at an increase of 51 per cent.

During the year, BHEL's output of power generation equipment was of the order of 2100 MW. It is almost equivalent to the total production of generating equipment by different units of the company since commencement of power plant. Taking into account the production in this line in the preceding year at 1050 MW, the year under review witnessed almost 100 per cent increase. Claimed to be the largest power unit, the 200 MW turboset, the first of its kind built in the country, was successfully tested at the Hardwar unit of BHEL during the year.

BHEL, today, have on hand orders of a sizeable value which include orders for export and IDA tenders at Rs. 190 million. Most of the export orders were secured by BHEL in the face of stiff international competition. Their export destinations during the year included Ghana, Iraq, Kenya, Kuwait, Malawi, Malaysia, Poland, Singapore, Sri Lanka, Federal Republic of Germany, Arab Republic of Egypt and Uganda. The export range mainly covered boilers, switchgears, transformers, motors and valves. In the year, boilers for 60 MW turbosets supplied to Malaysia were commissioned. The equipment is stated to be working satisfactorily.

As a part of their endeavour for progressive diversification and product development, BHEL have set up some new divisions during the year, such as, Central Reseach and Development Department for electrical industry with Headquarters at Hyderabad, Spare parts and Services Organisation, Consultancy Engineering Services Division, Central Foundry Forge Plant at Hardwar and Transformer factory at Jhansi.

For 1974-75, BHEL's turnover is estimated to be at Rs. 2910 million including work-in-progress. During the year, power plant equipment is estimated to be of the order of 2950 MW.

In India, apart from the public sector units, a number of units in the private sector are engaged in the manufacture of heavy electrical items. The production range of the heavy electrical sector broadly covers steam turbines, transformers, switchgears and motor starters, boiler and boiler mountings and diesel generating sets.

The heavy electrical industry is striving hard to reduce import content in the manufacture of transformers and other heavy electrical items.

FACTS ON COCONUT CULTIVATION

India's total production of coconuts during 1972-73 totalled 5954 million numbers. The output during the preceding year, in fact, was more at 6123.7 million numbers. The shortfall in output during 1972-73 is mainly attributed to the facts that Kerala, the largest coconut producing state in India, recorded decline in the yield per hectare while Tamil Nadu, the next best producing state, registered fall in the area under cultivation.

The total area under coconut cultivation during 1972-73 at 101 million hectares was more or less the same as in the preceding year.

Of the total output during 1972-73, Kerala although continued to be the largest single producing state at nearly 3921 million numbers, registered considerable shortfall in output as compared to the production in 1971-72 at 4054 million numbers. Tamil Nadu, the second important producer is estimated to have grown 932.20 million numbers as compared to 976.6 million numbers. The decline was evident mainly because of fall in the area under cultivation from nearly 114,000 hectares (1971-72) to 104,600 hectares (1972-73). Among other states which registered increase in output were Karnataka (644.30 million numbers against 637.70 million numbers), Maharashtra (47.10 million numbers against 44.4 million numbers) and Andaman and Nicobar Islands (63.8 million numbers against 63.6 million numbers).

The output of Goa, Daman and Diu, Lakshadweep, West Bengal, Pondecherry, Orissa, Assam and Tripura was constant at the preceding year's level while that of Andhra Pradesh declined marginally.

NATIONAL RADAR COUNCIL TO BE SET UP

A National Radar Council (NRC) is proposed to be set up in India to ensure proper coordination of the various activities in the field of Radar so as to meet the defence and civil requirements in an integrated manner. The Council is entrusted with the task of development, production and use of radars.

The major functions of NRC will be to formulate a Radar 'systems and components' plan to ensure standardisation of components and building blocks to generate sub-assemblies and sub-systems that can be used on an inter-changeable basis for a family of radars; to evolve modular designs and construction practices; to coordinate efforts of various agencies on research and development and production aspects so that there is maximum information transfer and liaison; arrange for work on futuristic systems, components and technologies; and relate all this to user's needs. The Council will function under the overall guidance of the Electronics Commission.

VESSEL FOR DRILLING OPERATIONS TO BE CONSTRUCTED

A twin screw steel sea going supply vessel useful for conducting drilling operations is to be built by M/s. Hindustan Shipyard Limited, Visakhapatnam for the Oil and Natural Gas Commission (ONGC).

Keel for the first of the two supply vessels has been recently laid on Berth No. 4 in the Hindustan Shipyard. The Shipyard secured the order for construction of two ships of this kind from ONGC on competitive tender basis and the deliveries are scheduled in October 1975 and January 1976 respectively. This is the first vessel of its kind to be built so far in the Shipyard. Basic design of the proposed ship, which has been supplied by a renowned firm in the United States, was modified by the Shipyard to suit Indian conditions and rules.

The supply vessel is designed to transport fuel, lubricants, cement, water, drill pipes and bits and other materials required for conducting drilling operations from the shore-base to the ONGC's self elevated drill ships at various drilling locations.

With the provision of air-conditioned cabin accommodation for 32 persons, including 12 members which are required to be transported to and from the shore-base, the supply vessel is expected to facilitate drilling operations effectively.

FACTS ON TOURIST INDUSTRY

Based on the sample survey of tourist expenditure, India's gross foreign exchange earnings from tourism were estimated at Rs. 675 million during 1973, according to the Ministry of Tourism and Civil Aviation of the Government of India. The rate of growth of tourist arrivals in the year at nearly 20 per cent compares well with the average growth of world tourism of 8 to 10 per cent per year. The average stay of international travellers to India exceeds 25 nights per traveller as against average stay in most of the other countries in the world at 3 to 7 days.

Four factors make India potentially one of the world's most exciting tourist destinations: the land, the traditional sculpture and architecture, the people and the emerging modern society in India. The land stretches from the mighty Himalayas down to Kanyakumari and provides a spectrum of natural beauty, the five thousand years old tradition of sculpture and architecture bears testimony to the finest creation known to civilised man, constituting a seventh of the human race, the people of India are varied in their ethnic origin, religion and cutoms, fairs and festivals, languages and politics, and yet tied together by a common bond of national unity; for centuries Indians have been taught to welcome a stranger as a freind. The emergence of a new country dedicated to democracy and socialism is another attraction to the foreign tourist; a major transformation is underway in the Indian economy which has already in a position to show to the world immense river valley projects, steel plants and industrial enterprises.

The Fifth Five-Year Plan provides for an outlay of Rs. 780 million for tourism programme in the central sector as compared to Rs. 250 million in the preceding plan.

The Department of Tourism is organising integrated development projects to attract a larger volume of traffic destination to India. Gulmarg—winter sports resort is an example of such an integrated project. This project is introduced to develop winter sports facilities which would make Gulmarg at present a summer resort into an year round attraction to tourists. Kovalam beach resort near Trivandrum in the State of Kerala is another example of the integrated projects. Hotels investment is another major input in the country's tourist infra-structure. Nearly 190 approved hotels are in operation with a room capacity of about 12,000. Another 108 new projects are underway and they will add about 10,000 more tourists to the existing capacity. It is estimated that at least 15,000 more hotel rooms would be required by the end of the Fifth Plan to accommodate an anticipated 0.8 million tourist arrivals by then. A scheme of compulsory payment of hotel bills in foreign exchange by non-residents has helped improve foreign exchange earnings to the tune of Rs. 42 million during November 1972 and June 1973, representing a 200 per cent rise over the figures of the previous years.

Besides hotel accommodation, subsidiary accommodation and other facilities for tourism are also being provided. With a view to foster youth tourist traffic, for instance, the Department of Tourism initiated a scheme to set up a chain of 17 youth hotels throughout the country. Each of these hotels is to provide accommodation for about 50 persons. Eleven new tourist bangalows are to come up to provide accommodation for about 64 tourists at each bangalow. These establishments are intended to cater to middle income group of foreign tourists. Accommodation and tourist handling facilities are also to be provided in motels cum reception centres.

As the archaeological and architectural sites of India are the prime tourists attraction, tourist facilities are sought to be improved at these places including at Tajmahal at Agra. Places connected with the life of Lord Buddha have a tremendous attraction for Buddhists from East Asia especially from Sri Lanka, Thailand, Cambodia and Japan. Adequate accommodation and transport facilities are provided at the places of Buddhist pilgrimage. There is a proposal to develop ten archaeological complexes which would include physical planning of the areas, improvement of tourist facilities and land-scaping and environmental improvement.

Wild life constitutes another major attraction to tourists. Construction of forest lodges has already been taken up at five wild life sanctuaries; Kaziranga

(Assam), Sasangir (Gujarat), Bharatpur Bird Sanctuary (Rajasthan), Dandeli (Karnataka) and Jaldapara (West Bengal). Photo-safari tours and bird watching tours are also to be popularised in an organised manner. India Tourism Development Corporation Limited (ITDC) aims at construction and management of hotels, restaurants, tourist bungalows and guest houses, provision of transport facilities, entertainment facilities as also shopping facilities. The Corporation manages the largest accommodation chain in India covering the whole country from Kashmir to Kerala. Its total bed-capacity of hotels, motels and travellers' lodges was nearly 2800 as on January, 1974. The Fifth Five Year Plan has earmarked Rs. 340 million to the Corporation, a major portion of which will be spent on the setting up of new units as well as expansion of some of the existing units to increase the accommodation capacity of the ITDC chain of hotels, motels and travellers' lodges by 5200 beds. The Corporation is now operating its transport services at 16 places in the country. The fleet of the Corporation comprises 107 luxury cars, 66 other cars, 27 coaches and 8 mini-buses. It has set up duty-free shops at the international airports at Delhi, Bombay, Calcutta and Madras besides providing shopping facilities to transit passengers. It organises sound and light shows for tourists. It has already been running a similar show at Red Fort, Delhi, one at Shalimar Gardens in Kashmir and Sabarmati on the life of Gandhiji.

Thus, the basic infrastructure for tourist development has been well laid down in India. The total number of tourists during 1973 at 409,000 was far higher than 342,950 in 1972. India's target for tourist travellers for 1973-74 was 400,000 which has been exceeded.

Next only to oil, travel is the world's second largest industry. More than 200 million people crossed national boundaries in 1972 for a holiday, spending over Rs. 200,000 million. Domestic tourism probably accounts for another 500 million travellers. India's share in world tourism is small at present. But the increasing rate of growth in the tourist travellers in India is indicative of the vast potential awaited in India.

IRRIGATION IN INDIA

RETROSPECT AND PROSPECT

India has the largest irrigated land in the world. The country has doubled its irrigated area since independence. Yet it depends largely on South-West monsoons as a principal source of water. Keeping in view the significance of agriculture as the major occupation of the population (80 per cent), the Government has laid special emphasis on the development of irrigation resources through various Five Year Plans.

Indian economy is estimated to have 175 million hectares of arable area. Of this, 142 million hectares are expected to be under cultivation by 1973-74. The ultimate irrigation potential in the economy is presently estimated at 107 million hectares of land, both from the surface and ground water sources.

At the beginning of the First Five Year Plan in 1951, total area covered under major and medium irrigation projects in the country was 9.7 million hectares. Since then, 76 major and 457 medium irrigation projects were taken up for implementation until the commencement of the Fourth Plan in April 1969. Of these, 16 major and 300 medium irrigation schemes had been completed and the work relating to 60 major and 157 medium schemes spilled into the Fourth Plan.

During the Fourth Plan, 18 major and 59 medium new schemes were approved for implementation. Owing to rising costs, some of the medium schemes (ranging between Rs. 2.5 million and Rs. 50 million) were treated as major schemes. This way, there had been 81 major and 213 medium schemes under construction during the Fourth Plan. Of this, 6 major and 39 medium projects have since been completed and work on another 19 medium schemes is almost complete. Accordingly, the latest position would indicate that now 75 major projects and 155 medium schemes will be spilling over to the Fifth Plan.

Since the beginning of the First Plan, major and medium irrigation projects have created an additional irrigation potential of 11.7 million hectares upto the end of the Fourth Plan (1973-74), bringing the total to

21.40 million hectares. For the terminal year of the Fourth Plan, the target was fixed at 1.14 million hectares while the actual achievement was the order of 1.10 million hectares.

During the Fourth Plan, a potential of 23.9 million hectares of gross area (cumulative) was targetted. Aganist this, actual achievement was 21.4 million hectares (cumulative). Gross area utilisation target was set at 20.9 million hectares and actual utilisation was 19.6 million hectares. For the Fourth Plan period, an outlay of Rs. 12,250 million was made for irrigation as against Rs. 5,760 million during the Third Plan, Rs. 3,800 million in the Second Plan and Rs. 3800 million (inclusive of an expenditure of Rs. 800 million prior to First Plan period) in the first Plan.

From only 9.67 million hectares at the beginning of the First Five Year Plan (1951), the land under irrigation covered by major and medium irrigation projects increased to 18.1 million hectares at the beginning of the Fourth Plan. During the Fourth Plan, an addition of 4.8 million hectares at an outlay of Rs. 9,510 million was initially envisaged. However, this estimated expenditure was revised at much higher level at Rs. 11,700 million while the additional irrigation potential is likely to be 3.3 million hectares. Steep rise in the cost af several projects was the main cause attributed to the disparity of reduced physical achievement against increased financial expenditure.

During the Fifth Plan, about 230 on-going projects including 75 major projects will spill over. An allocation of Rs. 12,100 million has been envisaged for continuing schemes, according to the Draft Fifth Plan. Keeping in view the longer period required for completion of the major projects, a number of new schemes are also proposed to be undertaken to maintain continuity in the development of irrigation. These will also help to ensure that during the Sixth Plan, requisite additional irrigation potential becomes available. According to the Draft Plan, an outlay of Rs. 10,640 million has been estimated for new schemes. A total outlay of Rs. 24,010 million has been estimated in the major and medium irrigation sectors including provision for investigations, research and designs. During the plan period, additional potential of 6.2 million hectares has been anticipated of which 5.5 million hectares would be from continuing schemes.

Flood and drought control are the two important aspects of irrigation facilities in India. Floods to rivers Ganga (the Ganges) and Brahmaputra basin every year pose serious problem of inundation and river erosion. Besides this, long sea coast in the country is also subjected to coastral erosion at different places. Data on flood damages reveal that on an average floods affect an area of 6.7 million hectares including 2.6 million hectares under crops. During 1953-72, the annual damage mostly to crops, houses and public utilities has been estimated at Rs. 1260 million. This is in addition to the indirect losses resulting from the breakdown of communications and essential services as also the expenditure to be incurred on relief operations. Keeping in view such devastating effetts of recurring floods on Indian economy, the Government has decided to pay special attention to this aspect during the Fifth Plan. A provision of Rs. 3010 million has been made for flood control problem in the Fifth Plan. It is expected that the Fifth Plan would provide for a reasonable protection to about 1.8 million hectares. The flood control schemes include the construction of new embankments and raising and strengthening of the existing ones and providing channels and multipurpose reservoirs and the like.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

EPOXY RESIN IMPROVES RELIABILITY OF COMMUNICATION CABLES

To prevent the ingress of moisture in telephone multi-pair cables resulting in cables faults, the Bombay Telephones have introduced gas pressurisation which means feeding the cables with an inert gas at 10 psi. At the cable pothead and other joints where gas has to be barricaded, Dobeckot 505 C/Hardener 756 and new system Dobeckot 505 C/Hardener EH 402 developed by M/s. Beck and Co., Poona are found suitable.

In the pothead joint a barrier is created with an epoxy resin, between the open ended PVC sheath cable (12 x 100 pairs) and underground paper insulated lead sheated cables (1200 pairs).

The two laboratory tests giving fairly reproducible results prove the excellent capability of the indigenous casting resin Dobeckot E4 in withstanding severe thermal shock stresses. The property can be advantageously used for casting and potting of defence electrical and electronic components and circuits.

These two comparatively simple in-expensive tests can be useful screening tests for users and manufacturers of resins. The tests can be a guide for optimizing resin formulations incorporating reactive diluents and flexibilizers like Dobeckot C.

Further technical details on Dobeckot E4 and Dobeckot C or thermal shock test methods are available on request from the Technical Services Departmennt of Dr. Beck & Co. (India) Ltd., Pimpri, Poona.

NEW INITIATORY COMPOSITION MANUFACURED

Explosive compounds which can be used as initiators in ammunition are very few in number in India and even these have their limitations for use. A new initiator has recently been developed by Explosive Research Development Laboratory (ERDL), Ministry of Defence, Poona, which combines in it the most desirable properties of storage, stability and compatibility with copper for use in detonators, cap compositions and primers for ammunition.

The properties of this initiator indicate that it can replace with advantage ASA composition in civil and military detonators.

One of the main advantages of this initiator is its freedom from the formation of any type of dangerous compound with copper when in contact with copper shells and tubes. In gassy mines, where aluminium detonators cannot be used, detonators filled with this initiatory explosive in copper tubes can be safely used.

The product can also be used as a filling component in all types of detonators viz. safety detonators, electric detonators and as an initiating material for filling in caps of various types.

The present demand of the product is being met by Indian Detonators Ltd., Hyderabad and Indian Explosives Ltd., Gomia, Bihar. It is expected that there will be a good future demand for both civil and military uses.

In the process developed by ERDL, the solutions of sodium salt of diazoaminotetrazolic acid and magnesium styphnate are mixed in a mixing vessel and are added to a reaction vessel where solution of lead nitrate is also added. The reaction vessel is stirred continuously and the temperature is maintaind within the desired range. After the reaction is over, the contents of the reaction vessel are filtered or decanted to separate mother liquor from the precipitate. The precipitate is then washed and dried.

Batches of 50 gms. of the product have been established in the laboratory. The process can be scaled up for bulk manufacture. An adequate quantity of the new initiatory compound or filled detonator with this compound can be supplied if required by entrepreneurs.

The raw materials required for the preparation of the new initiatory composition are aminoguanidine bicarbonate, magnesium styphnate, lead nitrate and magnesium oxide. All these are available indigenenously.

The machinery required for the manufacture of this product does not include any special equipment. All the required equipment can be got fabricated in any workshop to a size suited to the quantity of product the entrepreneur decides to manufacture.

INDIA'S WOOLLEN INDUSTRY

Woollen textile industry occupies an important place in India's textile complex. For long, the country has enjoyed the reputation of weaving a fascinating variety of woollen fabrics, notably pashmina cloth, a fine soft fabric prepared from pashm which closely resembles wool. Kashmir Valley has been the principal centre of pashmina weaving, the fame of which spread to Europe centuries ago, and "Cashmere" became synonymous with fine woollen fabrics.

The Indian woollen industry comprises an organised sector and a wide range of decentralised units. While the latter represents the traditional handicrafts and skills in design, the former represents the modern component of sophisticated production techniques and management.

The number of mills engaged in the industry in the organised sector is 139 out of which 100 are for wool spinning and 39 are composite mills. The present installed capacity is 3,20,984 spindles and about 3,867 looms. On an average, the annual production is in the range of 23 5 million kg. of woollen worsted yarn, 13.4 million metres of woollen worsted cloth and 4.3 million kgs. of non-wearable woollen fabrics.

India's 42 million sheep produce annually about 76 million lbs. of raw wool. In terms of productivity, the average yield of sheep in the country works out at about 2 lbs. as against over 9 lbs. in Australia. Even with a modest improvement in the yield, the country's raw wool production can be stepped up to 90 million lbs. by 1974 and efforts are being made to improve the yield gradually. About 50 per cent of the raw wool produced in India is below 40's count, a substantial part of which is exported and the rest is used for the manufacture of apparel and floor coverings. With a view to attaining self-sufficiency, investigations to regenerate wool from human hair and other materials, such as, coarse/waste wool were undertaken at the Defence Research Laboratory (Materials), Kanpur and the results of the investigations are being implemented.

During 1972-73, 10.06 million kgs. of raw wool and 3.57 million kgs. of shoddy were imported. Since 1967, the import of wool shoddy rags, wool waste and synthetic fibre tow for the woollen textiles industry had been canalised through the State Trading Corporation of India. The Fourth Five-Year Plan envisages an annual production of 25 million metres by 1973-74. Large sheep breeding farms are being developed under the plan programmes to produce quality stud rams of important indigenous breeds of sheep and superior exotic breeds. Among the other expansion measures envisaged are the promotion of the tufted carpet sector and modernisation of the existing machinery in the woollen textile mills. To keep abreast of the davelopments taking place elsewhere, the Indian woollen industry has laid stress on research. The Wool Research Association has brought about many improvements in existing processes and the development of woollen products.

In the export field, the woollen industry has made a remarkable headway. In fact, Indian woollens have never been in as great a demand as they are today. In 1972-73, the export value of wool and woollens reached the record figure of Rs. 482 million, which is higher by over Rs. 130 million compared to the preceding year. The sectors that are mainly responsible for the increase are woollen carpets together with woollen hosiery and woollen blankets and also shawls.

The export rise has been evident despite the stiff competition faced from the established exporters of the West and Japan in the East.

In the traditional category, the products which have made a distinct impact on the world markets are raw wool, carpets, druggets and namdahs and shawls and lohis. The wollen shawl industry in India is one of the oldest engaged in exports to Europe and Middle East countries since the 19th century. The Pashmina woollen shawls made of pashmina wool which is the under hair of a breed of goats raised on the Himalayan heights, have earned popularity in several countries. The shawls of Kashmir and Punjab are cherished not simply for the soft and fine texture of the fabric but for their colourful and attractive patterns. It is said that it is almost impossible to find among hand embroidered Indian shawls, two pieces which are identical in pattern or handi-work and this is the secret of the Indian shawls. Afghanistan, Bahrein, South Yemen Republic, Denmark, Qatar, Yemen Arab Republic, Dubai, France, Kuwait, U.S.A., Saudi Arabia and Bangladesh are among the leading buyers of Indian shawls, rumals (handkerchiefs) and lohis.

Carpets, druggets and namdahs constitute another distinct category in the export trade. In 1972-73, the world markets including U.S.A., U.K., Canada, West Germany, Australia, Belgium, Denmark, Switzerland, France and Italy absorbed as much as Rs. 180.17 million worth of these products. To be able to meet the growing world demand for hand knotted carpets on a competitive basis, a quality marking scheme for carpets has been introduced in India and a compulsory labelling scheme has also been evolved whereby no carpets could be allowed to be despatched for export unless the label is tagged to it giving information regarding the producer's name or registration number, origin of country, types, quality and contents.

Exports of Indian wool worsted and polyester blended fabrics and readymade garments made therefrom totalled Rs. 30.11 million in 1972-73. While the U.S.S.R. is the foremost importer of woollen readymade garments, U.K., Sudan, Czechoslovakia, Canada, Tanzania, Hong Kong, Zambia, Sweden and Denmark are the leading importers of the fabrics. The non-traditional woollen manufactures like fabrics and garments owe much of their success in the export field to quality consciousness. Quite a few varieties of fabrics exported now can stand comparison to the quality fabrics available in world markets including those of U.K. and Japan. Strict quality control is an in-built part of the entire manufacturing process and no pains are spared in meeting the exacting specifications in various processes - be it spinning of the yarn, top dyeing or yarn dyeing or weaving of the fabrics. Today, the Indian readymade garments that are finding increasing popularity due to their quality are in the varieties of shirts, trousers, babywear, ladywear and lately jackets.

Coming to another important non-traditional item of export, woollen hosiery has made a remarkable headway in overseas supplies. During 1969-70, the export value in the line was of the order of Rs. 53.8 million. During the year 1972-73, it recorded a new height of Rs. 164 million. This performance compared to Rs. 3 million worth of export value in 1964-65 is by any standard remarkable. East European countries are the largest recepients of woollen hosiery. Afro-Asian markets are also emerging as significant importers. The hosiery items of India now popular in the export market range from cardigans and pullovers to sweaters and jerseys, stockings and vests, socks and gloves and balaclava caps.

The woollen industry in India is thus ready to meet the challenge of ever mounting world demand. ☐

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COKEOVEN PLANT MACHINERY TO YUGOSLAVIA

For the first time, India has secured a sizeable export order for a cokeoven plant from Yugoslavia. M/s. Engineering Projects (India) Limited (Himalaya House, Kasturba Gandhi Marg, New Delhi), a public sector undertaking, have secured the order for supply of a portion of a plant and machinery to a large cokeoven plant under construction at Baker in Yugoslavia. An agreement for the order worth Rs. 57 million has been recently signed by the Indian firm and M/s. Zelerzia, Sisak of Yugoslavia.

The Engineering Projects (India) Limited (EPI) has on hand a number of turnkey projects of a total value of about Rs. 750 million. The firm is negotiating a number of export orders with other countries; it is shortly opening offices in Kuwait and Beghdad in a serious effort to enter the West Asian markets.

EPI is engaged in supply of equipment for steel plants, mines, fertiliser factories and other industrial projects by entering into contracts for design, manufacture, inspection, supply, erection and commissioning of equipment on a turnkey basis. During 1973-74 (up to January 1974), their value of business at Rs. 255 million comprised projects already implemented worth Rs. 69 million. Additional business at about Rs. 150 million was proposed to be secured by them by the end of March 1974. Thus, the total business likely to have been received by them during the entire year of 1973-74 would be of the order of over Rs. 400 million. They have so far prepared and submitted 23 tenders for turnkey projects, both in India and abroad. Among their projects abroad are Coal Handling System for Seyitomer Thermal Plant, Turkey; Coke Oven Plant in 'Sisak' Yugoslavia; 33/11 KV Sub-Station in Kuwait; Re-rolling Project in Dubai and Project report and turnkey offer for industrial rubber plant for Sri Lanka. At home, their recent assignments included work on three projects—Coal Handling Plant for Haryana State Electricity Board, Silo Project for Food Corporation of India and Bailadilla Iron Ore Project (Part III).

DEFENCE PRODUCTION UNITS EARN FOREIGN EXCHANGE

India's policy for production of equipment for defence purposes is oriented with great emphasis towards indigenisation and close coordination with larger development efforts in the country. The accepted aim of self-sufficiency and self-reliance is being progressively achieved. Happily, the defence production units are also contributing their mite to fulfil the national objectives of export promotion.

Production is organised mainly in nine public sector undertakings and thirty departmental factories located all over the country. The largest among the public sector undertakings, the Hindustan Aircrafts Ltd. (HAL) with its headquarters at Bangalore has 11 factories at various places in India. It produces several types of aircrafts, aero engines, air to air missiles and many items of aeronautical equipment. Among the aircrafts manufactured by this undertaking are HF 24, a supersonic jet fighter, Kiran, a basic jet trainer, Gnat, a light jet fighter, Alouette, a seven seat helicopter, SA-315, a light weight helicopter, MIG-21. M, a supersonic jet interceptor, HS-748, a transport aircraft and Basant, an agricultural aircraft. The organisation also undertakes repair work. HAL has successfully developed indigenous production of a number of items hitherto imported, such as, aluminium copper, aluminium magnesium alloy sheets, spring steel, glass cloth and other aircraft accessories. During 1972-73, the total value of HAL's export earnings including repair and overhaul services for foreign customers amounted to Rs. 2 million and is expected to be of the order of Rs. 6 million in 1973-74.

Bharat Electronics Ltd. (BEL), established in 1954 at Bangalore, has developed into the foremost electronic unit in the country with a production level of Rs. 400 million in 1972-73. It is currently manufacturing high grade professional electronic equipment, such as, transmitters, receivers, radars and their components like crystals, semi-conductors, magnetrons, X-ray tubes, T.V. picture tubes etc. A second unit is now being set up at Ghaziabad near Delhi. The value of exports made by BEL in 1972-73 was Rs. 11 million and is expected to be even higher in 1973-74. Australia, New Zealand, UK, Federal Republic of Germany, Canada, USA and countries in the Middle East and South Asia are among the destinations for these exports.

Mazagon Docks Ltd. at Bombay, Garden Reach Workshops Ltd. at Calcutta and Goa Shipyard at Goa are three undertakings engaged mainly in building and repairing of naval ships. Mazagon Docks is now a premier shipyard capable of building various types of ships upto 145 metres in length and 24 metres in breadth (about 15,000 tonnes dwt). Apart from shipbuilding, it

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can undertake ship repairing and also repairs to machinery and equipment. At present, it is engaged in building frigates for the Indian Navy, a passenger-cum-cargo vessel, dredgers, fishing trawlers and barges.

The company carries out repairs to all kind of ships which can enter Bombay harbour. The foreign exchange earnings on account of repairs to foreign ships during 1972-73 amounted to Rs. 20 million.

The Garden Reach Workshops has a number of units in and around Calcutta, one at Ranchi and another at Nagpur. The main activities are construction of large capacity dredgers, other medium and small crafts, manufacture of road rollers, air compressors, turbine pumps, marine diesel engines and conveyor systems. It has recently been awarded large value contracts involving manufacture, installation and commissioning of sophisticated conveyer systems for Visakhapatnam outer harbour and Neyveli Lignite Corporation and construction of a cutter section dredger of 10,000 cu. m. per hour capacity for the Ministry of Shipping. The company has undertaken expansion programme for creation of facilities for construction of ocean going ships upto 28,000 tonnes dwt.

Goa Shipyard Ltd. is engaged in construction of small dredgers, barges upto 1000 tonnes dwt, fishing trawlers and other harbour crafts apart from carrying out repairs to such crafts. The foreign exchange earned by the company was Rs. 32,000 in 1972-73. The total value of production in 1973-74 is expected to be Rs. 200 million.

Praga Tools Ltd. manufacture machine tools. The value of their exports in 1972-73 was about Rs. 0.3 million and is expected to rise to Rs. 0.5 million in 1973-74.

Bharat Earth Movers Ltd. have two units, a Railcoach factory at Bangalore and Earth Moving Equipment Factory at Kolar Gold Fields. The company is making all efforts to promote exports of its products. The value of exports during 1972-73 was Rs. 2.2 million and is estimated at Rs. 4.2 million in 1973-74. The company is establishing contacts with potential customers and importing agencies in Bangladesh, Kuwait, Dubai, Iraq, Muscat and Sri Lanka. They have already developed a 2.3 cubic metre capacity shovel (180 HP). A number of other types of equipment, such as, 4.5 cubic yard (300 HP) wheeled front end loader, a multipurpose bucket for D50 Tractor are under development. The company has also organised an efficient 'after sales service' for the convenience of its customers.

Bharat Dynamics Ltd., established at Hyderabad in 1970, manufacture anti-tank missiles. The production in 1972-73 was valued at Rs. 22 million and is anticipated to go upto Rs. 51 million in 1973-74. This has resulted in sizeable foreign exchange saving.

A new unit Mishar Dhatu Nigam Ltd. is being set up at Hyderabad for manufacture of special metals and super alloys required in aeronautics, missiles and instrument industries. There are at present only a few manufacturers of these items in the world. With the successful commissioning of this plant, India will be one of the very few nations which possess the technology for manufacturing these special metals and alloys.

Apart from the above undertakings, defence equipment is also produced in thirty departmental factories located all over the country covering a wide range of goods including ferrous and non-ferrous metals, alloys, explosives, small arms, machine guns, automatic rifles to field guns, anti-aircraft guns, depth charges, trucks, patrol vehicles, machine tools, general stores, bridges and floats. The indigenous content of the products is being progressively increased. Normally the entire production of these factories is meant for the Indian Defence forces but requests from friendly countries for the supply of defence stores are also complied with to the extent possible on a commercial basis thereby earning valuable foreign exchange.

The total value of exports of the public sector undertakings producing defence equipment was around Rs. 35 million in 1972-73 and is expected to be about Rs. 44 million in 1973-74. The major contribution in regard to foreign exchange earnings accrues from Mazagon Docks Ltd., by way of repairs. However, their major contribution is towards saving of large amounts of foreign exchange through import substitution and making India self-sufficient in defence requirements.

INDIAN TEXTILES AND GARMENTS POPULAR ABROAD

Indian clothing supplied abroad brought in increased foreign exchange earning at Rs. 560 million during 1972-73 as compared to Rs. 376.50 million in the preceding year. This export uptrend was maintained in the first half (April-September 1973) of the following year also when the exports secured Rs. 308 million as against Rs. 278.65 million in the comparable period of 1972-73.

Cotton manufactures also witnessed the same uptrend in exports during 1972-73. Their export value rose sharply to Rs. 1267 million from Rs. 1000 million in 1971-72. During April-September 1973 also, the exports secured sizeable value at Rs. 945.50 million against Rs. 563 million in the corresponding period of the preceding year.

Adding to the export endeavour of the cotton textile industry, M/s. Binny and Company Limited (7, Armenian Street, Madras) were able to secure export orders valued at Rs. 27.20 million during their year ending December 1973. The firm, in fact, earned more foreign exchange during the year as compared to their export realization in the preceding year at Rs. 18.30 million. Notwithstanding the fact that their garment factory went on production stream only during the latter half of 1973, their endeavour to book export orders to the tune of such a sizeable value indeed deserves mention. Their garment unit undertakes production mainly for export purposes to fulfil their export obligation. The firm's textiles and garments are sought after by a number of countries which include developed and developing ones alike.

India's total production of cotton cloth was of the order of 8022 million metres in 1972 as against 7356 million metres in the preceding year. During the first six months of 1973 (January-June), it was estimated at 3590 million metres. India's cotton textile comprises 687 mills (on 1st August 1973). Of these, 398 were the spinning mills and 289 composite mills. The total installed capacity of both the categories of mills was of the order of 18.45 million spindles while the number of looms engaged was 205,000.

STEEL PIPES AND TUBES EXPORTS UP

With an export earning valued at as much as Rs. 40 million in 1973-74, M/s. Bharat Steel Tubes Ltd. (Connaught Place, New Delhi), have more than doubled their foreign exchange earning of Rs. 18.50 million in 1972-73. Their total turnover at Rs. 123 million for the year was also better compared to the preceding year. Tubes and pipes manufactured by the firm are sought for by a number of countries including USA.

The firm is turning out the tubes and pipes in varying sizes and diameters to suit wide applications. These cater mainly to the requirements of gas, water, steam as well as oil and petroleum fields. Apart from this, the firm is progressively diversifying its production range. Currently, it is setting up a handtool project at Aurangabad in Maharashtra. It has already received a letter of intent for the manufacture of handtools at an installed capacity of 5000 tonnes per annum. The project is expected to be commissioned within a period of about a year and a half and is likely to be the largest unit of its kind in the country. Sixty per cent of the production has been committed to exports.

Another step forward towards diversification by the company relates to promoting of a project for manufacture of authomobile tyres and tubes with an annual capacity of 0.50 million for each; the firm is to receive technical collaboration from the USA in this connection. Estimated to cost about Rs. 60 million, this project is being set up by the company at Kerala where the bulk of Indian natural rubber is produced. The implementation of the project has already been started. It is likely to be completed within 2 years.

Total exports of steel tubes, pipes and fittings from India was valued at Rs. 95.30 million in 1973-74 (April to October 73) as compared to Rs. 70.75 million in the corresponding period of the preceding year. During the aforesaid period of 1973-74, galvanised and non-galvanised tubes and pipes of iron and steel (except cast iron welded) alone fetched as much as Rs. 70.60

million. Saudi Arabia, Dubai, Australia, Federal Republic of Germany, Iran, Kuwait, Iraq, Jordan, Libya, Qatar, UK and USA were the major destinations. The other principal variety exported included cast iron tubes, pipes and fittings. Their export earning during the period amounted to about Rs. 13.85 million. These supplies were directed mainly to Czechoslovakia, Poland and Singapore.

At present, India has 15 units for the manufacture of black and galvanised steel pipes required for water supply and structurals. Their installed capacity is 110,956 tonnes. In addition, many units have been registered under the automatic registration scheme, out of which a capacity of about 90,000 tonnes has been established. The production is estimated to be 370,000 tonnes during 1973 against 322,219 tonnes in 1972.

BOOST IN EXPORT OF MEDICINAL AND PHARMACEUTICAL PRODUCTS

Among non-traditional commodities, medicinal and pharmaceutical products have been contributing more and more to India's export growth in recent years. From Rs. 40 million in 1968-69, the export earning rose to Rs. 60 million in 1969-70, Rs. 84.65 million in 1970-71 and Rs. 96.25 million in 1971-72. The export value reached a record level of Rs. 103.20 million in 1972-73. During the first seven months (April-October 1973) of 1973-74, it was of the order of Rs. 63.45 million compared to Rs. 46.35 million in the same period of the preceding year.

Besides Thailand, Zambia and Nepal, advanced countries like USA, USSR, Federal Republic of Germany and UK are among the prominent importing countries of these products.

Adding to the export effort in the line, M/s. Sandoz India Ltd., Thana, Bombay, a noted manufacturer of drugs and pharmaceuticals has succeeded in increasing its exports almost six-fold to Rs. 20 million in 1973 from merely Rs. 3.35 million in 1972.

Besides drugs and pharmaceuticals, the Bombay Company is engaged in manufacture of textile chemicals, dyestuffs and agrochemicals. Recently, the Company has received a letter of intent for manufacture of ekalux, a new pesticide from more basic stages.

Medicinal and pharmaceutical industry in India, has over the years, built a sound production base. The infrastructure of the industry encompasses a number of units, scattered all over the country with Bombay, Calcutta and Delhi as the major producing centres. The industry's output was estimated at Rs. 3,600 million in 1972-73. The output of essential drugs is growing and new items are being added to the production stream every year.

EXPORT PERFORMANCE AND POTENTIAL

INDO-SENEGAL TRADE AGREEMENT

A five year trade agreement between India and Senegal has been signed recently. The first ever agreement of its kind between the two countries provides for mutual exchange of a comprehensive range of goods. Under the agreement, India will supply jute, textiles, engineering and electrical goods, food products and many other consumer and industrial goods to Senegal and will import from that country petroleum products, rock phosphates, cotton, chemical fertilisers, raw cashew nuts, livestock and hides and skins.

Apart from the above commodities, the agreement also provides for the export from India to Senegal of beverages, chemical products, house building material, hardware, books, tobacco and rubber products. Initially, the agreement is valid for one year but will be renewed from year to year.

So far, trade exchanges between India and Senegal have not been significant. But in view of the potential of commercial exchanges between them, the trade agreement marks a determined effort by both the countries to open up growing channels of trade expansion and diversification.

India's export trade to Senegal totalled merely Rs. 1 million in 1972-73; it was of the value of Rs. 4.6 million in 1971-72. Indian imports from Senegal were negligible in these years. Jute manufactures constituted the principal item of exports from India, followed by furniture and other articles.

Besides the trade agreement, a Five Year Economic, Scientific and Technical Cooperation Agreement was also signed between the two countries.

INDIA'S TRADE WITH TANZANIA

India exports a wide range of commodities to Tanzania which include traditional as well as non-traditional items. These are mainly tea, perfumery, medicinal and pharmaceutical products, paper and paper board, cotton yarn and thread, jute manufactures, cotton fabrics and made up garments, manufactures of metals, machinery (other than electric), electrical machinery, transport equipment and developed cinematographic films. India's imports from Tanzania are raw cashew nuts, sisal fibre, wattle extract, copper and raw cotton.

Indian exports are generally of the order of Rs. 40 million per annum. In the first seven months of 1973-74 (April-October 73), exports amounted to Rs. 33 million, an improvement of 38 per cent over the corresponding period of 1972-73. The major commodities exported were jute goods (Rs. 11 million) and machinery of various types (Rs. 7 million). Tanzania's exports to India are generally around Rs. 200 million. In 1972-73, they stood at Rs. 279 million and in the first seven months of 1973-74, the amount was Rs. 150 million. Raw cashew nuts alone accounted for Rs. 228 million in 1972-73 and raw copper for Rs. 26 million. Other important commodities included sisal (Rs. 6 million), wattle extract (Rs. 9 million) and raw cotton (Rs. 4 million).

India and Tanzania had concluded a trade agreement in December 1972. It has been brought into force on 28th February, 1974 - the date on which the instruments of ratification were exchanged. It is an agreement on general lines aimed at development and diversification of trade between the two countries.

The National Industrial Development Corporation Ltd. (NIDC) have concluded a five year agreement with Tanzania for providing consultancy services to the National Development Corporation of that country. Following this agreement, the Indian Company was entrusted with five studies, namely, feasibility study for machine tools plant, diversification study for steel rolling mill, study of the working of the National Steel Corporation Ltd., feasibility study for setting up of agricultural machinery and farm implements and assessment of steel distribution systems in Tanzania.

WOOLLEN EXPORTS MAINTAIN RISING TEMPO

India's wool and woollen exports during the first three quarters of 1973-74 touched the figure of Rs. 385 million in comparison with Rs. 364 million during the corresponding period of last year, registering a rise of Rs. 21 million or 5.75 per cent. The export earnings in respect of India's major traditional items viz. woollen carpets, druggets and numdahs increased from Rs. 152 million to Rs. 180 million and in respect of raw wool from Rs. 38 million to Rs. 39 million.

Among the non-traditional items woollen knitwear and shawls at Rs. 141 million and Rs. 4 million improved their export earnings by Rs. 4 million and Rs. 2 million respectively during the period. However, some decline was noticed in the export earnings in the case of items, such as, woollen blankets, woollen ready-mades. Again a marginal decline is also observed in the export of woollen/worsted and mixed fabrics.

The export value of wool and woollen products has been registering a constant and steady rise - Rs. 480 milion in 1972-73 as compared to Rs. 358 million in 1971-72, Rs. 326 million in 1970-71, Rs. 267 million in 1969-70, Rs. 266 million in 1968-69 and Rs. 264 million in 1967-68.

The export range of the industry covers carpets, druggets and numdahs, woollen hosiery, raw wool, blankets, shawls, shoddy wool, wool tops, worsted yarn, knitted wool, woollen and mixed fabrics and woollen ready-made garments.

U.S.S.R., Federal Republic of Germany, U.S.A , Canada, Netherlands, Poland, Belgium and Malaysia are the important markets for these products.

HOUSEHOLD EQUIPMENT ACTIVE IN EXPORT TRADE

India-manufactured household equipment of base metals secured Rs. 49.50 million during 1972-73, registering more than 25 per cent increase over the export value in the preceding year at Rs. 39.50 million. The exports, in fact, improved to these levels from only Rs. 28 90 million in 1968-69, Rs. 29 million in 1969-70 and Rs. 30.70 million in 1970-71. This consistent export uptrend proves the growing popularity enjoyed by these products overseas.

In the entire group of household equipment, EPNS ware constituted the principal category as foreign exchange earner during 1972-73. From Rs. 10 million in 1971-72, its export value rose to Rs. 17.50 million in the following year, accounting for more than one third of the total foreign exchange earnings. USSR was the leading market for the product, having imported worth Rs. 5.15 million. USA was the next best destination which bought worth Rs. 2.75 million, followed by UK at Rs. 1.55 million.

Aluminium utensils was the next best item active in exports during the year. Registering almost 100 per cent increase, their exports improved sharply to Rs. 10.60 million from Rs. 5.36 million (1971-72). Bangladesh emerged as the biggest market for these utensils having imported worth Rs. 4.60 million. In the preceding year, its purchases were nil. Among other buyers, Malavi, Kuwait, Fiji Islands, Saudi Arabia, Lesotho and Dubai were significant.

Besides these principal varieties, the other categories of domestic utensils active in the export trade included sanitary fixtures of copper and alloys (Rs. 4.20 million); stainless steel utensils (Rs. 3.72 million); galvanised iron buckets (Rs. 1.58 million); brass utensils (Rs. 1.86 million) and ghamellas (Rs. 0.60 million). Cast iron pans, enamelled iron utensils, utensils of iron and steel, copper utensils and utensils of aluminium alloys also figured in exports of domestic utensils of base metals.

Next to domestic utensils of base metals, the group of domestic stoves, boilers, coolers and ovens continued to sustain its export level during 1972-73. Its export earning in the year was about Rs. 5.9 million.

In the group, burners, stoves of copper and alloy fetched Rs. 2.60 million against Rs. 1.88 million; oil pressure stoves of copper and alloys Rs. 1.97 million against Rs. 2.55 million and other stove parts of copper and alloys Rs. 1.10 million against Rs. 0.70 million. During 1972-73, Philippines, Libya, Peru, Morocco and Saudi Arabia were the leading buyers of burners for stoves of copper and alloys, while Libya, Dubai, Saudi Arabia, and Kuwait were the prominent importers of oil pressure stoves of copper and alloys. Stove parts of copper and alloys were bought by about 40 countries amongst which Morocco and Libya were significant.

Apart from the above groups, other household equipment of base metals secured over Rs. 1 million (1972-73) against Rs. 1.55 million (1971-72). Trophies, indoor ornaments of metals and mirrors of base metals were the specific items supplied overseas.

BOOST IN EXPORT OF SPICES

A new height has been attained in the exports of spices from India during the year 1973-74. During the year, the export of spices amounted to 57,149 tonnes valued at Rs. 543 million as against 45,289 tonnes valued at Rs. 290 million in 1972-73, registering an increase of 26.2 per cent in terms of quantity and 80.7 per cent in terms of value. The previous record in export of spices was Rs. 389 million only in 1970-71.

Pepper was the most important item which brought Rs. 289 million in foreign exchange earnings accounting for 55 per cent of the total exports of spices in terms of value. Total quantity exported was 30,718 tonnes as against 19,958 tonnes valued at Rs. 143 million in 1972-73. The export of pepper in 1973-74 has crossed all the previous levels, both in terms of quantity and value.

Cardamom ranked next, which brought in Rs. 109 million, the quantity exported being 1,729 tonnes as against Rs. 68 million for 1,384 tonnes in 1972-73. Dry ginger accounted for Rs. 25 million as compared to Rs. 21 million in 1972-73. Turmeric earned Rs. 33 million as against Rs. 18 million in the previous year.

Exports of other spices also registered an increase both in terms of value and quantity and earned Rs. 57 million as against Rs. 28 million in the previous year. Among these, the contribution of cumin seed was Rs. 22 million, celery seed Rs. 12 million, curry powder Rs. 7 million and cassia Rs. 7 million.

The significant buyers of Indian spices are U.S.S.R., U.S.A., Yugoslavia, Singapore, Fiji Islands, German Democratic Republic and Federal Republic of Germany.

NAPHTHA ON EXPORT STREAM

With the shipment of 18,000 tonnes of Naphtha from Cochin to Japan, India has entered a new phase in the export context. This shipment constitutes a part of a 40,000 tonnes export deal. The country is to earn about Rs. 50 million through the deal.

Naphtha is essential for producing fertilizers. The present position of surplus in Naphtha in the Indian economy is the result of the drastic reduction in the consumption of petrol during the last six months of steep increase in prices. The export of Naphtha has become possible due to the fact that domestic demand from fertiliser plants is lower than the availability and the refineries are facing storage problem.

The steep increase in petrol prices in November last has brought about a 25 per cent reduction in its consumption since then. This has resulted in a saving of about 200,000 tonnes of petrol, all of which has been converted into Naphtha - tonne for tonne - it is learnt. The reduction in the consumption of petrol in a full year is stated to bring about 425,000 tonnes of petrol or Naphtha. Conversion of this much of Naphtha is expected to yield 850,000 tonnes of urea.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

INDIA'S FIRST PEACEFUL NUCLEAR EXPLOSION

The Atomic Energy Commission (AEC) of India have recently (May 18, 1974) carried out a nuclear explosion experiment using an implosion device for peaceful purposes. The explosion was carried out underground at a depth of more than 100 metres.

The experiment was a part of the programme of study of peaceful uses of nuclear explosion undertaken to keep India abreast of the development in this technology. Use of atomic explosions in the fields of mining and earth moving is not only very speedy but also economical as compared to the traditional methods used in construction of reservoirs and canals for irrigation. The nuclear explosion of the type carried out could be utilised to move large quantities of earth and rock to increase production from gas fields or to facilitate exploitation of low grade deposits of non-ferrous metals. Another possible application of contained nuclear explosions is exploitation of geo-thermal energy sources. It envisages the fracture of the ground containing geo-thermal energy source, introduction of water in the fracture systems and removal of superheated steam for the generation of electric power. Other applications of nuclear excavation could be : harbour construction, development and management of water resources, construction of highways and railways through mountainous terrain, removal of navigation hazards and the use of the crater created by the explosion as a parabolic bowl for large fixed radio-telescopes. Such excavations might be used as surface storage reservoirs to reduce floods and for irrigation water or waste water.

As for the peaceful use of nuclear explosions in scientific studies, experiments in nuclear physics have made use of the extremely high density of neutrons produced by such explosions.

The AEC estimates that atomic explosives would be 20 times cheaper and thermonuclear explosives like the hydrogen bomb more than 500 times cheaper than conventional explosives. It said that nuclear excavation would be quite competitive if a 100 kiloton or more powerful nuclear device was used.

The most surprising point is that Indian scientists have succeeded in conducting the experiment without any radio active fall out. It suggests that the Indian scientists have developed the technology of peaceful nuclear explosions to such an extent that they can be conducted even at a fairly shallow depth without causing any contamination of the atmosphere.

It is reported that plutonium was the explosive used in the Indian device. Plutonium is a man-made metal which is produced from uranium 238 placed in the reactor core. The plutonium thus formed is recovered by extremely complicated techniques in a special laboratory as it is highly toxic. The Indian device was in the range of 1000 tonnes to 15000 tonnes of TNT and was made at Trombay at the Bhabha Research Centre.

India is the sixth country in the world after USA, USSR, UK, France and China, and the first among the developing countries to have mastered the technology of nuclear explosion. India is, however, opposed to military uses of nuclear energy and has no intention to produce nuclear weapons.

FACTS ON STEEL INDUSTRY

India's production of steel ingots totalled 6.98 million tonnes during 1972-73 and 4.96 million tonnes in the first three quarters of 1973-74. Wayback in 1961-62, the country's steel ingot output was only 4.28 million tonnes. Towards the 1972-73 production, the contribution of Bhilai, Durgapur and Rourkela, the three public sector projects of Hindustan Steel Ltd. totalled 4 million tonnes while the two private sector units, namely, M/s. Tata Iron and Steel Company (TISCO) and M/s. India Iron and Steel Company (IISCO) contributed 1.69 million tonnes and 0.43 million tonnes respectively.

The country's production of saleable pig iron was 1.42 million tonnes in 1972-73 and 1.2 million tonnes in the first three quarters of 1973-74 (upto December 1973). Here again, the contribution of public sector projects, including Bokaro was the maximum (1.13 million tonnes).

The total production of saleable steel in the country was 4.79 million tonnes in 1972-73 and 3.2 million tonnes in the first three quarters of 1973-74. The contribution of Bhilai, Durgapur and Rourkela steel projects in the public sector was as much as 3.68 million tonnes in 1972-73.

The production of tool alloy and special steels by nineteen manufacturers totalled 432,850 tonnes in 1972-73 and 250,865 tonnes in the first three quarters of 1973-74. The contribution of the Hindustan Steel Limited Plants was 83,683 tonnes and 59,756 tonnes in these periods respectively. The Alloy Steel Projects in Durgapur, again in the public sector, contributed 35,835 tonnes and 28,195 tonnes respectively. The major production, however, was by M/s. TISCO in the private sector; its output in 1972-73 was 176,070 tonnes including saleable semis.

India's production of finished steel was of the order of 5.5 million tonnes in 1972-73 and 3.46 million tonnes in the first three quarters of 1973-74. Categorywise, the country's total production of mild steel was of the order of 5.08 million tonnes during 1972-73. The mild steel production mainly consists of light and medium structurals and heavy rails, black sheets, mild steel bars, rods, plates, M.S. wires and strips.

In 1972-73, India's imports of iron and steel amounted to 1.24 million tonnes valued at Rs. 2,201 million. The major items of import were mild steel (worth Rs. 1502 million) followed by alloy steel (Rs. 315 million) and high carbon (Rs. 311 million).

In 1972-73, India exported iron and steel products worth Rs. 196.84 million (477,500 tonnes) mainly comprising pig iron valued at Rs. 132.3 million and structurals at Rs. 49.3 million. The export of rails, rounds, rods and G. C. sheets respectively amounted to Rs. 7.49 million, Rs. 4.06 million and Rs. 3.65 million.

The major importer was U.S.S.R. which bought 185,910 tonnes of pig iron during 1972-73 and 215,608 tonnes of the same in the first three quarters of 1973-74. The total quantum of pig iron exported in these two periods respectively was 406,715 tonnes and 390,826 tonnes. Apart from U.S.S.R., Japan is another important purchaser of pig iron from India and bought 174,629 million tonnes in 1972-73. Among the other important buyers of pig iron were Singapore, Yugoslavia, Taiwan and Philippines.

The Soviet Union was again the top importer of structurals from India during 1972-73 (39,920 tonnes). Iran and Indonesia were the other major buyers of structurals. The Arab Republic of Egypt, Indonesia, Iran and Sudan were the Principal importers of rounds and rods from India during 1972-73 while the ARE and Burma together imported 10,338 tonnes of rails in 1972-73.

In addition to the export performance of iron and steel items, India also exported Rs. 12.8 million worth of iron and steel scrap during 1972-73. This figure is estimated to have been far exceeded in the subsequent year.

The domestic demand for finished steel in 1969-70 was placed at 5 million tonnes and export at 0.9 million tonnes was aimed at. The actual steel consumption in 1969-70 was 4.4 million tonnes. The domestic demand for mild steel is estimated to be 5.8 million tonnes in 1973-74.

A target of 11 million ingot tonnes capacity in the integrated steel plants was set for the Fourth Plan period. By the first year in the Fifth Plan, an installed capacity of 10.6 million ingot tonnes is to be achieved—8.9 million tonnes in the existing steel plants and 1.7 million tonnes in the first stage of Bokaro. The overall indigenous availability of mild steel by 1978-79 is expected to be about 9.8 million tonnes which will more or less meet the estimated domestic demand, according to the Annual Report of the Ministry of Steel and Mines (1973-74).

Briefly stated, the steel development programme in the Fifth Plan period in India centers round the expansion of Bhilai Steel Plant from its capacity at 2.5 million ingot tonnes to 4 million ingot tonnes and continuing the work at Bokaro achieving the capacity of 4.75 million ingot tonnes. Also the work is to be continued in three new steel plants at Visakhapatnam, Vijaynagar and Salem. Proposals are under consideration for expansion of M/s. TISCO from 2 million ingot tonnes to the capacity of about 4.5 million ingot tonnes. In the Indian Iron and Steel Company, a rehabilitation programme has been initiated to revamp the plant and equipment so that it can operate at the rated capacity of one million tonnes.

As regards the export policy in India, the export of mild steel has been reduced to the minimum to retain market contacts developed in the past and for meeting some requirements of neighbouring countries. This has been done in view of the pressure of domestic demand. The steel export demand includes three groups of items, namely, those which are freely exportable subject to ceiling, those which are exportable on merits and those exports of which are not allowed at all. The policy as formulated for 1973-74 for iron and steel, ferro alloys and ferro scarp allows (subject to a ceiling) the export of pig iron (basic and foundry grade) ingots, billets, heavy and medium (rolled structurals), rails, G. C. Sheets, alloy constructional steels, electrical steel sheets (Dynamo grade) and mild steel bars and rods including wire rods in the iron and steel sector; ferro manganese (other than that containing less than 0.05 per cent carbon), ferro manganese slag, ferro-silicon, ferro-chrome (other than that containing less than 0.03 per cent carbon) and the ferro alloys group and cast iron borings de-tinned, scarp, mill scale scrap, iron and steel skull scrap, broken ingot moulds and bottom plate scrap in the ferrous scrap group.

Exports are not allowed of iron and steel other than cast iron pipes and fittings, slabs, blooms, plates, tinplate prime secondary waste, chequered plates, skelp, G. P. sheets, C. R. sheets and coils, wheels and tyres, axles, sleepers (pressed), steel wires other than M. S. wires and wire rods other than mild steel wire rods and in the group of ferrous scrap, heavy melting scrap, stainless steel scrap No. 1, quality sheet cuttings and punchings, rejected castings scrap (other than cast iron scrap), defective slabs/blooms, defective billets scrapper and unserviceable rails and other re-rollable scrap.

COTTON TEXTILES

PRODUCTION TREND

India's total production of cotton textiles reached a peak level of 8022 million metres druing 1972 as against 7,356 million metres in 1971, according to the Office of the Textile Commissioner, Bombay. The production rose to this level from only 4,740 million metres in 1951, 6515 million metres in 1956, 7,073 million metres in 1961, 7,336 million metres in 1966 and 7,850 million metres in 1970.

India's cotton yarn production also registered improvement during 1972 at 972 million kgs. as against 881 million kgs. in 1971, 907 million kgs. in 1966, 862 million kgs. in 1961, 758 million kgs. in 1956 and 591 million kgs. in 1951.

Of the estimated cloth production during 1972, the mill sector accounted for 4,245 million metres (534.65 million kgs.) while the share of decentralised sector was of the order of 3,777 million metres. In the preceding year (1971), the production of both the sectors was of the order of 3,957 million metres (487 million kgs.) and 3400 million metres, respectively.

The cotton textile industry had in its infrastructure 688 mills comprising 398 spinning mills and 290 composite mills (July 1973). The installed capacity of both the categories of mills totalled 18.45 million spindles. Of this, the spinning mills had a total installed capacity of 6.20 million spindles while that of composite mills was about 12.25 million spindles. The industry had in all 206,295 looms installed.

Inclusive of both the categories of mills, Tamil Nadu topped the list of states having the highest number of mills at 212 numbers, followed by Gujarat 118 numbers, Maharashtra 107 numbers, West Bengal 41 numbers, Uttar Pradesh 35 numbers, Andhra Pradesh 33 numbers, Mysore (Karnataka) 30 numbers, Kerala 27 numbers, Madhya Pradesh 23 numbers, Rajasthan 21 numbers, Haryana 10 numbers, Punjab 8 numbers, Bihar, Orrissa and Pondicherry 5 numbers each, Delhi 4 numbers, Assam 2 numbers and Jammu and Kashmir and Goa 1 number each.

EFFORTS TO PROMOTE CASHEW OUTPUT

India is the foremost exporter of cashew kernels in the world, having earned nearly Rs. 690 million of foreign exchange in 1972-73. The country's cashew output improved from 158,000 tonnes in 1963-64 to 200,000 tonnes in 1970-71, according to the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India. The target of production for the Fourth Plan was set around 236,000 tonnes.

Cashew cultivation in India is mainly confined to the Southern States of Kerala, Mysore, Goa, Andhra Pradesh and Tamil Nadu but other states, such as, Maharashtra, Orrissa and West Bengal too are contributing to the overall production on a moderate scale.

Indigenous production is not sufficient, however, to meet the demands of cashew processing industries and as such, India has to import raw cashew nuts in sizeable quantities from abroad, mainly from the East African countries.

During the Fourth Plan, a number of measures were envisaged to increase the output of cashew. These included production and distribution of cashew air layers. During the plan period, it was decided to distribute 275,000 air layers at a subsidised rate of 50 per cent. Introduction of better cultivation methods included setting up of demonstration plots for cultivators. During the Fourth Plan, it was targetted to set up 1500 demonstration plots for the benefit of cashew cultivators. Besides these, prophylactic plant protection measures were also adopted during the Fourth Plan and an average of 40,000 hectares had been fixed for which a subsidy on the basis of per hectare had been provided. Currently, a scheme of area expansion of 5,000 hectares and a package programme for another 5,000 hectares are being implemented on a pilot basis. The total outlay for the programmes during the Fourth Plan was of the order of Rs. 10 million.

The Central Plantation Crops Research Institute of Kasargod has set up a cashew seed multiplication centre at Shantigodu, near Puttur in South Kanara district. This is to evaluate the available genetic material for isolating the superior ones and multiplying them so as to make available sufficient planting material to cashew cultivators. This seed orchard in the Narimogaru reserve forests is claimed to be the first of its kind in India. The cashewnut yield in India is stated to be less than 400 kg. per hectare, which could be increased three-fold by planting genetically superior seeds and adopting proper plant protection measures. Promising varieties have been assessed for their yield potential under different climatic conditions in India.

During 1972-73, India's exports of cashew earned foriegn exchange at Rs. 688.20 million as against Rs. 614.30 million in 1971-72. In terms of quantity, 66.30 million kgs. and 60.37 million kgs. were supplied abroad during the years. In the first two quarters of 1973-74 (April-September 1973), the exports brought in Rs. 462.15 million for supply of 34.30 million kgs. During 1972-73, Canada, USSR, USA, Australia, Italy, Japan, Lebanon, Netherlands, Hong Kong, German Democratic Republic, Czechoslovakia and Federal Republic of Germany were the prominent buyers.

India's imports of raw cashew nuts during 1972-73 totalled Rs. 318 million while in the first two quarters of the following year, these were of the order of Rs. 136.30 million. Tanzania, Kenya and other East African countries were the significant exporters to India.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

NATIONAL RESEARCH DEVELOPMENT CORPORATION OF INDIA

The National Research Development Corporation of India (NRDC), for the third successive year, continued to make significant progress in all spheres of its activity. During 1973-74, NRDC has advanced its global contacts. The Corporation was invited to present key paper on Transfer of Technology from Loboratory to Industry at the International Seminar on Technology Transfer organised by UNIDO/CSIR in New Delhi in December, 1971. It participated in a meeting of NRDC Type of Organisations, convened by NRDC of U K. Contacts were also renewed with TNO Holland. Close personal contacts were established with ANVAR France. NRDC processes are regularly being published by some of the technology transfer corporations outside India. NRDC was represented in the Government of India delegations which participated in the Third Asian Meeting to Promote Industrial Projects, organised by UNIDO and ECAFE. Contacts made in this meeting are likely to result in export of NRDC know-how to some countries in South East Asia. One process, Highdraught Kiln was recently sold to a party in Nepal.

NRDC was successful in attempting to transfer technology available with established industry in India to another in order to prevent repetitive import of the same technology. Two electronic companies and two chemical companies have now offered processes, such as, Carbon film resistors, Mylar capacitors, Styroflux capacitors, Aluminium fluoride and Cryolite to NRDC for licensing.

In 1973-74, the National Research Development Corporation of India sanctioned ten developmental projects - Prototype for Naptha cracking, P. P. for extraction of Benzene, P. P. for P-Xylene Oxidation, P. P. for distillation, Development of Heavy Duty Large Dimensioned facing lathe (Model FCL-32), Pilot Plant for Visbreaker, Pilot Plant for large scale De-oiling of wax, Development of Cooker-Extruder model, Fly-ash Brick Plant and Demonstration-cum-semi commercial unit for production of Extra Fine Zinc Dust. These projects worth Rs. 30 million are to be implemented in collaboration with industry.

NRDC has increased liaison with Industry and R & D Institutions during 1973-74. Fiftytwo technical notes were published. The availability of the processes was advertised in the daily press and technical journals. NRDC participated in several meetings and exhibitions organised by technical institutions, scientific bodies and industry and have made known to them the latest working of the NRDC and their policy to collaborate with industry in developing know-how to fill technological gaps in India.

With effect from April 1, 1973, the Inventions Promotion Board was merged into NRDC. The work of giving encouragement to individual inventors has been reorganised and criteria developed for better assessment of the inventions for prize awards and for making availale monetary help for the building of prototypes, models etc.

NRDC has established contacts with some of the nationalised banks. Through these contacts, it has been able to provide funds to the technocrats for paying premia for buying know-how from NRDC. This has also helped the new entrepreneurs in getting quicker financial assistance from the banks.

IMPORT SUBSTITUTION IN GENERATOR/TRANSFORMER COMPONENTS

Stator punchings which are used in amplidynes - a special type of D.C. Generator used in control systems, are now to be manufactured in India for the first time. Highly complicated and difficult to produce, stator punchings were hitherto being imported from abroad.

M/s. Bharat Heavy Electricals Limited (BHEL), Bhopal, for the first time in India, have established the process for the manufacture of these punchings; the press tools used in the manufacture, are also designed and manufactured by BHEL themselves.

Twenty eight slots of the close spacings which complex contour of varying area are being notched by using three sets of slot dies, each operating four times in succession. The relative pitches of different slots are accurately controlled by a compact indexing fixture carrying an adjustable carrier plate which in turn carries a location-cum-index ring mounted over the rollers. Provision has been made in carrier and location plates to accommodate all three sets of slot dies accurately. Very little stock material is left between slots of punching. This presented the main difficulty in grouping of slots in each set of the notching die.

Die and punch steel are hardened steel with ground finish to a high accuracy. Die and punch clearance is thirteen microns.

Apart from this, BHEL (Transformer Division) has also to its credit development of the 22 KV, 5500 Amps bushings which are used in the manufacture of transformers. Being imported into India hitherto, the indigenous manufacture of these bushing is expected to save foreign exchange to the tune of nearly Rs. 100,000 per annum.

BHEL, so far, were using imported two bushings per phase or one bushing of high current rating to meet the current requirement on the LV side of big transformers. The bushings developed by the BHEL can be used upto 550 Amps. All the routine tests as well as impulse and heat run tests were completed successfully. These bushings are capable of meeting the requirement of Indian and International Standards.

In their drive to achieve maximum import substitution, BHEL are instrumental in developing quite a few items, currently being imported from abroad. They are working on certain project for the indigenous development of imported items in collaboration with other manufacturing concerns in the country. Recently, they have developed two such items for their use in the manufacture of transformers. These are, (i) centrifugal type transformer oil pump and (ii) reflux valve, both used in the cooling circuit of power transformers. These two items were also subjected to rigouros tests at the manufacturers' works and found to be suitable to meet the needs of BHEL. The use of these items is expected to save foreign exchange at a value of about Rs. 200,000.

MANUFACTURING PROCESS FOR PHTHALATE PLASTICIZER

The National Chemical Laboratory (NCL), Poona, has developed a process for the manufacture of an important phthalate plasticizer, namely, butyl octyle phthalate (BOP) which can be used in many non-electrical applications, particularly in sheets, floorings, leather cloth, flexible films and plastisols. Further, BOP is likely to be used as part replacement of dioctyl phthalate (DOP) which is in short supply due to shortfall in production of 2-ethyl bexanol (raw material for DOP). BOP is not yet manufactured in India.

The NCL process consists of esterification of phthalic anhydride with n-butanol and 2-ethyl hexanol in presence of a suitable catalyst to obtain BOP. The NCL process has been standardised on 45 kgs per batch scale.

The product has been tested and found to compare favourably with imported samples.

It is estimated that around 1500 - 2000 tonnes per annum of BOP is likely to be used as partial replacement of DOP. The BOP plant can be used not only for DOP, but also for various other plasticizers. NCL has already developed know-how for DOP/dibutyl phthalate (DBP) which can be made available to the interested parties.

Main raw materials required for the manufacture of BOP are phthalic anhydride, n-butyl alcohol, 2-ethyl-hexanol and ancillary chemicals including catalysts. All these are available indigenously.

MANUFACTURE OF ULTRASONIC LEAD DETECTOR

M/s. Vibronics Private Limited (4, Kurla Industrial Estate, Ghatkopar, Bombay) have reported that they have been manufacturing and marketing ultra-sonic leak detectors (type LD 73) which can locate leaks in any pressure of vacuum systems by using ultrasonic energy generated by molecular collisions when gas or air is forced through any small orifice. The instrument is immensely useful for routine maintenance on plants or equiment where leaks could cause shutdown.

Among the typical applications of the detector are for detecting leaks in high-pressure pneumatic and hydraulic systems, pressurized compartments in aircrafts and ships, chemical plant pipelines, high pressure gas mains, pipelines under construction or repair, coupling and seating of valves, boiler pipelines and vehicle air brake systems. The detector is also useful for the detection of high tension corona discharges and bearing noises.

It was reported in this Weekly (Vol. IV No. 18 dated May 4, 1974) that the Defence Electronics Research Laboratory, Hyderabad has also developed an ultrasonic leak detector which could detect leaks in pressurised cable plants, large welded structure hydraulic systems in vehicles, air-conditioning ducts and vacuum systems.

ON SHIPPING AND SHIP BUILDING IN INDIA

India had a shipping tonnage of 3.02 million GRT by the end of Jaunary 1974. This tonnage was spread-over 268 ships of which 201 ships with 2.79 million GRT were meant for overseas services and 58 ships with 0.23 million GRT were for coastal services.

The Fourth Plan target for shipping (by 1973-74) was 4 million GRT with 3.5 million GRT in operation and 0.5 million GRT on order. As against this, the tonnage in operation by the end of January 1974 was 3.02 million GRT and the ships aggregating about 2 million GRT were either under construction or on order. Taking into account the tonnage in operation and construction or on order, the Plan target has not only been reached but even exceeded.

Indian shipping is now operating on several liner routes : From India to U.K. and continent, U.S.A., and Canada, Australia and South East Asia, Japan and Far East, Australia, East Africa, Bangladesh, West Africa, West Asia, Gulf, Red sea ports, Arab Republic of Egypt, U.S.S.R , and Black sea ports, Poland, GDR and Mauritius. In the overseas sector, Indian shipping (liner trade) is carrying about 45 per cent of external trade. The major portion of the trade, however, consists of bulk commodities like iron ore, petroleum products, foodgrains and fertilisers which move in tramp trades. In the carriage of these commodities, the share of Indian shipping is still not so significant with the result that the overall share of Indian shipping in its overseas trade is about 16 per cent.

During 1972-73, sailing vessels lifted 840,470 tonnes of cargo consisting of 755,942 tonnes on the coast and 84,528 tonnes in the near grades i.e. India and West Asia and India and Sri Lanka.

In the context of shipping in India's public sector, the contribution of the Shipping Corporation of India is unique. The Corporation has come to acquire a pre-eminent position in the Indian shipping industry and has grown to be one of the largest shipping lines in the world. Its fleet increased from 78 ships of a total DWT of 1.38 million as in March 1972 to 95 ships of 1.87 million DWT as in March 1973. An important feature of the expansion of the Corporation's fleet has been the planned diversification of its composition into bulk carriers for ore, oil, grain carriers and large size tankers besides cargo liners in keeping with modern world trends. As much as 65 percent of the Corporation's present tonnage consists of such specialised ships. By the end of March 1973, the Corporation had 41 ships on order aggregating 1.69 million tonnes of DWT. These orders comprise dry cargo vessels, passenger-cum-cargo vessels, super tankers, product carriers, container-oriented vessels, bulk carriers, coal carriers, and so on. It is expected that by the end of 1976, the Corporation's tonnage could reach 4.59 million DWT mark. (From the present 2 million tonnes DWT position, its tonnage is expected to improve to 3 million DWT during 1974-75).

M/s. Mogul Lines Limited is another public sector shipping company with a tonnage position of 57,760 GRT by the end of 1973. The company proposes to increase its tonnage by half a million tonnes by the end of the Fifth Plan (1978-79).

In the context of shipbuilding activity in India, M/s. Hindustan Shipyard Limited, Visakhapatnam, has contributed the most. To develop the shipyard into a viable unit and increase production substantially, an integrated development programme is under implementation. The production value of the yard during 1973-74 inclusive of ship construction, ship repairs, capital and other works executed is estimated to be of the order of Rs. 166.73 million as against Rs. 127.60 in the year 1972-73. The target for 1974-75 is to keel laying three ships, launching 3 ships and delivery 3 ships. The yard attained considerable progress in the field of import substitution and has developed indigenous manufacture for important items like ships, machinery like propeller, shafting and bearings, main and auxiliary diesel engines and anchor chain cables, deck sounding scuttles and so on. The yard purchased selected units for minor and major steel fabrication jobs.

Envisaging the construction of a building dock yard for building ships up to 85,000 DWT and a ship repair dock to accommodate ships up to 100,000 DWT, the Cochin Ship Yard project is under consideration. It has entered into a contract with Mitsubishi Heavy Industries Limited, Japan for consultancy during the construction of the shipyard. An agreement was signed with M/s. Scott Lithgow Limited for technical assistance in shipping design and building and training of shipyard personnel.

Port development is another important aspect of the shipping industry in India. The country's seaborne trade passes through eight major ports. The operational efficiency of these ports determines the prosperity of the regions that they serve over the Plan years. Heavy investment has been made for the development of these major ports. Up to the Fourth Five Year Plan period, a sum of Rs. 2536 million was spent for the purpose. In the Fourth Five Year Plan period, the investment earmarked for major development was of the order of Rs. 2800 million. This investment position was later on revised to Rs. 3040 million. The total traffic handled by the major ports, Calcutta, Bombay, Madras, Cochin, Visakhapatnam, Kandla, Mormugao and Paradeep has been around 54 and 59 million tonnes in the last four to five years. It is estimated that the traffic handled by the major ports during 1973-74 would be around 62 million tonnes as against 58 million tonnes in 1972-73. At the beginning of the Fourth Plan, Madras and Visakhapatnam ports were able to handle ships up to 35,000 DWT and Mormugao of about 60,000 DWT. These ports will be able to receive ore carriers up to 100,000 DWT and 60,000 DWT at the berth respectively.

Provision has been made in the Fifth Plan for development of capacity of Visakhapatnam port to handle ships of 150,000 DWT. As regards Madras and Mormugao, it is proposed to develop the capacity to receive ships of 100,000 DWT at each port.

Apart from the major ports mentioned above, there are several minor ports, executive responsibility for the development of which vests in the maritime State Government concerned. The minor ports include Gopalpur port in Orissa, Kakinada in Andhra Pradesh, Cuddalore in Tamil Nadu, Beypore port in Kerala, Karwar in Karnataka, Mirya Bay in Maharashtra and Porbander in Gujarat. ☐

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TRANSMISSION LINE TOWERS IN EXPORT TRADE

Among the recent lines of sophisticated engineering production in India, transmission line towers have made appreciable headway in the export field. Iran, Thailand, Libya, Mozambique and Kuwait are among the prominent importers for these products from India. Besides physical exports, the industry is also supplying technical know-how to co-developing countries in this field.

In the context of export effort in the line, M/s. Kamani Engineering Corporation (Nicol Road, Ballard Estate, Bombay) have improved their export earning to Rs. 96.40 million in 1972-73 from merely Rs. 18 million in 1968-69. Alongwith the improvement in exports, their turnover also revealed growth from Rs. 83.90 million in 1968-69 to Rs. 211.50 million in 1972-73.

Besides transmission line towers, the firm's export range includes power conductors, brass strips and rods, red lead, zinc oxide, reclaim rubber, electric transformers, steel tubes, dyes and chemicals and stainless steel utensils. Their exports are directed to both developing and developed countries.

The firm's transmission line tower production capacity which was of the order of 60,000 tonnes per year has recently been expanded to about 90,000 tonnes per years. The company's road roller unit at Wadala has been modernised. They report that they have also recently received a licence for numerically controlled lines for manufacture of sophisticated towers to cater to the market in USA and Canada. They are also reported to have received a letter of intent for their bolts and nuts project.

The organised sector of India's transmission towers industry has 18 units in its infrastructure with combined total installed capacity of 95,100 tonnes. During 1972, actual production was of the order of 60,000 tonnes as against 57,770 tonnes in the preceding year.

TELEPHONE EQUIPMENT POPULAR ABROAD

Excelling their cumulative exports valued at Rs. 1.63 million for the first three quarters of 1973-74, the Indian Telephone Industries Ltd. (ITI), Dooravani Nagar, Bangalore, a public sector unit engaged in manufacture of telephones, telegraphic equipment and ancillaries, have succeeded in raising their exports to Rs. 2.72 million during the last quarter of the year. The exports for the entire year (1973-74) thus added up to Rs. 4.37 million as compared to Rs. 4.10 million in the preceding year and Rs. 3.20 million in 1971-72.

With modest beginning in the export field in 1962-63, total exports of ITI amount to Rs. 50 million so far. This is significant considering competition put up by long established manufacturers in the line in developed countries. Also, the supplies made are to meet stringent specifications. In case of advanced countries, the supplies effected by ITI are to match with equipment of a high standard already existing in those countries.

The equipment produced by ITI finds its way to about 40 countries of the world including Australia and UK. During the last quarter of 1973-74 alone, supplies were directed to more than 12 countries including Australia, Belgium, Bhutan, Iraq, Jordan, Kenya, Malaysia, Nepal, Singapore, Sikkim, Sri Lanka, Somali Democratic Repupblic and Tanzania. The export range included crossbar exchange spares, 50.7 line private automatic exchanges (less switches), automatic branch exchange equipment, telephone exchange spares, 1000 lines automatic telephone exchange equipment, coil assembly and a host of other accessories and equipment.

ITI's value of production in the first three quarters of 1973-74 (April-December 1973) was of the order of nearly Rs. 206 million while in the entire preceding year it was as much as Rs. 341 million. Their total turnover so far exceeds Rs. 2,500 million. Creditably, ITI has developed quite a few products to keep pace with the latest technological developments. These include multiplex equipment, microwave equipment for satellite earth stations (for long distance communication), specialised equipment for Railway and Defence and modern electric exchanges.

Their total output during 1972-73 comprised of 0.25 million instruments of various types, 128,000 line strowger exchange equipment, 95,000 lines of cross-bar exchange equipment and trasmission equipment. Its units set up at Naini near Allahabad (U.P.) and the other in Kashmir have recently gone on production stream. In addition to these, two more units are being set up at Rae Bareilly in U.P. and Kerala State.

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INDIAN CUTLERY TO CANADA

Indian cutlery is gaining more and more popularity every year in overseas markets. The export value which was of the order of Rs. 4.36 million in 1971-72 improved to Rs. 5.72 million in 1972-73. During the first seven months of 1973-74 (April-October 1973), it totalled about Rs. 2.85 million.

Besides tableware (including spoons, forks as well as handles of cutlery of base metals), the major categories of cutlery exports are knives, razors and razor blades, scissors and their blades.

The export effort of tableware secured Rs. 2.75 million in foreign exchange in 1972-73. Interestingly USA and UK. were the leading buyers. The other important markets included Bulgaria, Canada, Sweden, USSR, Poland and Nigeria. The export value of safety razor blades and other razor and razor blades was Rs. 1.60 million. Ethiopia and Sudan were the major customers for these blades. The export earning of scissors and their blades which were also active in exports in the line totalled nearly Rs. 0.70 million with Ethiopia and Zambia as the major destinations.

Contributing to the export effort in the line, M/s. Orienial Metal Pressing Works (P) Ltd. (131, Worli, Bombay), are currently executing an export order worth Rs. 1 million for supply of stainless steel cutlery to Canada. The Bombay company has been active in the export field since 1961 and has been supplying its stainless steel cutlery, utensils, sinks, sinks with drainboard and metric measures to the Middle East and European countries including West Germany, Sweden, UK, and even Canada and the USA. Currently, they are exporting large quantity of M. S. cylinders to the UK.

Besides stainless utensils and cutlery, the production profile of the Bombay firm covers railway carriage and signalling items, such as, roof ventilators and light fittings as also hose pipe clips, axle pulleys, wire pulleys, stainless steel wash basins of different types, squatting pans, sinks, sinks with drainboard, ash trays, bottle openers, mirror frames and louvres.

Set up in 1918, the Bombay firm is, today, a well equipped organisation having facilities for machining, production lathes, blanking and pressing machines of varied capacities of the gear drives and hydraulic types, fabrication, polishing, buffing and galvanising and its speciality is press tool work. It has set up 5 automatic polishing plants recently imported from Federal Republic of Germany, for polishing the cutlery, capable of polishing 10,000 numbers per shift per day.

India's production of cutlery items by the three manufacturers in the line in the organised sector was of the order of 265 tonnes (1972). Import of cutlery items is banned.

Stainless steel sheets required by the industry are being produced by M/s. Durgapur Alloy Steel plant. However, indigenous requirement is not yet fully met and a part of the requirement is, therefore, met through imports. The raw materials available indigenously include CRCA sheets and brass sheets.

TOYS FOR EXPORT

Though a new line of export, India-made toys and indoor games for children have gained considerable popularity in the world markets in recent years. The export range includes mechanical and metallic toys, plastic and rubber toys as also wooden toys and toy parts. During 1972-73, Hong Kong was the leading buyer of plastic toys. Among other importing countries, Nigeria, Yemen Arab Republic, South Yemen People's Republic and Saudi Arabia were prominent. For rubber toys, Nigeria, Morocco, Yemen Arab Republic, and Sudan were leading markets. Mechanical toys, wooden toys and metal toys were mainly bought by UK, USA and Federal Republic of Germany. Dolls (excluding artware) were also exported during the year to Zambia, Senegal and USA.

Contributing to the export effort in the line, M/s. Raja Mechanical Co. (P) Ltd. (33, Deputy Ganj, Delhi), manufacturer of mechanical and battery operated toys, have succeeded in doubling their limited

Rs. 12.60 million, the exports witnessed decline as compared to the export value in the preceding year (April 1972-February 1973) at Rs. 16.25 million. Among other items in this group which improved their export earning sizeably were : polyethylene film sheets and bags (including woven sacks) Rs. 9.53 million as compared to Rs. 4.60 million, plastic electric accessories Rs. 5.75 million against Rs. 3.60 million, fountain pens, ball pens and ball point pens Rs. 7.60 million against Rs. 2.20 million, laminates Rs. 2.30 million against Rs. 1.39 million, PVC rigid pipes and conduits Rs. 3.29 million against Rs. 0.10 million, plastic bangles Rs. 4.36 million against Rs. 4 million, metallised plastic products Rs. 1.36 million against Rs. 0.40 million and PVC sheets Rs. 2.73 million against Rs. 2.15 million.

PVC gramophone records which did not appear at all in exports during April, 1972-February, 1973, fetched as much as Rs. 6.80 million in the period under review of 1973-74.

Apart from these main items, export of GRP manufactures, plastic dental products, handbags and other PVC fabricated goods, foam leather cloth and sheeting, petro cellulose cloth and other plastic products also registered moderate increase.

Spectacle frames earned less foreign exchange at Rs. 8.67 million against Rs. 14.88 million while PVC leather cloth exports looked down at Rs. 2.77 million from its earlier level of Rs. 3.67 million. Similarly, exports of polyurethane foam and its products, plastic brushes and vinyl asbestos floor tiles also declined marginally.

In the group of linoleum products, PVC compound (PVC resins) exports shot up to Rs. 3 million from only Rs. 5,200 while plasticisers whose export value was nil during April 72-February 73 earned as much as Rs. 1.59 million in the subsequent comparable period. Phenol formaldehyde moulding power also secured more at nearly Rs. 1 million as against only Rs. 2669 in the comparable period last year. Export of both the varieties of linoleums i.e. felt based and jute based came down to a level of only Rs. 4.50 million from Rs. 8.40 million while polylined jute exports also slided down to Rs. 2.93 million from Rs. 4.72 million.

EXPORT PROMOTION BY MAHARASHTRA

Maharashtra, the leading industrialised state in India, contributes sizeably to the country's export endeavour. The contribution of the state in India's overall exports is estimated roughly between 15 to 20 per cent. For instance, during 1971-72, the state accounted for 67 per cent of India's total exports of cotton textiles, 48.7 per cent of the exports of engineering goods, nearly 80 per cent of gem and jewellery exports, over 79 per cent of sugar exports, nearly 55 per cent of basic chemicals exports, 31.7 per cent in chemical and allied product exports and 73 per cent in plastic exports.

Exports of some major commodities from the state have gone up sizeably over the years. Besides occupying an important position in India's total export trade, Maharashtra contributes substantially for the growth of exports in non-traditional lines of manufacture. It is claimed that its share in India's non-traditional exports is nearly 35 percent. The comprehensive range of non-traditional goods export covers sophisticated products, such as, electronic items, machine tools, radiators, electric appliances, pharmaceuticals and drugs and medicines.

The State's cotton textile exports which were of the order of Rs. 580 million in 1968 rose sharply to Rs. 770 million in 1972 while its engineering exports increased from Rs. 169 million to Rs. 570 million, gem and jewellery from Rs. 235 million to Rs. 378 million, basic chemicals from Rs. 56 million to Rs. 173 million, chemical and allied products from Rs. 68 million to Rs. 110 million and plastics from Rs. 17 million to Rs. 46 million.

Realising the vast potential for India's electronic goods in overseas markets, an export processing zone in the field has been set up at Santacruz near Bombay. This is entirely an export oriented project in which electronic units admitted to the zone are obliged to export 100 per cent of their production. The export earning from the zone are expected to be available in the latter half of 1974-75.

The state awaits a vast potential for export of a number of products, such as, chillies, oranges and processed foods, marine products, mangoes, cashew nuts, coir products, shawls (Himroo), bidriware and many other products originating from small scale industries.

Maharashtra is already contributing 30 per cent to the India's exports of processed foods but the share can go high if some food processing factories are set up in areas like Vidharbha and Konkan which produce quality fruits. A variety of orange and mango products find their way overseas from the state. However, overseas markets for banana, citrus fruits and grapes in West Europe, USSR, Gulf countries, Japan and South East Asian countries are still untapped.

Even small scale industries in Maharashtra play an important role in the state's export endeavour. This sector accounts for about 40 per cent of exports of the state.

Maharashtra's contribution to India's total industrial production is also substantial. The industrial production of the state increased from Rs. 26,920 million in 1966 to Rs. 40,460 million in 1972.

COTTON TOWELS POPULAR ABROAD

Sizeable sums of foreign exchange are being earned through the export of cotton towels from India to a large number of overseas markets. While during 1972-73, the export value was of the order of Rs. 73 million, in the first 7 months of 1973-74 (April-October 1973), the value stood at Rs. 41.50 million. In the 7 months of 1973-74, handloom towels netted Rs. 10.50 million while mill-made towels secured Rs. 31.00 million. During the year 1972-73, the share of handloom towels totalled Rs. 16.75 million while that of mill-made towels was Rs. 56 25 million.

U S.S.R , bought worth Rs. 27.50 million of these towels during 1972-73 and about Rs. 7.2 million in the period under review in 1973-74. U.S A.'s import was about Rs. 9.3 million during 1972-73 and Rs. 9.12 million in the subsequent period.

The other major markets for handloom towels are the U.K., Poland, New Zealand, Australia and Japan. For mill-made towels, the other important customers are the U.K., Canada, German Democratic Republic and Poland.

Thirty overseas markets figured in the list of importers of handloom towels and 47 markets for mill-made towels during the period of April-December 1973.

CRUDE OPIUM IN EXPORT TRADE

Crude opium is an important foreign exchange earner for India It secured Rs. 162 million 1972-73 and Rs. 73 million in the first seven months of 1973-74 (April-October 1973).

During 1972-73, the major importers were the U.K., U.S.A., U.S S.R., France and German Federal Republic in that order. The U.K.'s imports were worth nearly Rs. 40 million while U.S.A. bought worth Rs. 36 million, U.S S.R. Rs. 23 million, France Rs. 16 million and the German Federal Republic Rs. 12 million. Other importers were Japan, Netherlands, Belgium, Bulgaria, Spain, Switzerland, Italy and Argentina.

In the first seven months of 1973-74, the major customers in order of importance were the U.S.A., U.K., France, German Federal Republic, U.S.S.R., Japan and Italy.

VELVET EARNS FOREIGN EXCHANGE

Velvet, a re-generated fibre, is exported by India to several markets abroad. The product earned an export value of Rs. 18.74 million during 1972-73 and Rs. 13.4 million in the first seven months of 1793-74 (April-October, 1973).

U.S.A., has been the largest market for this item. It imported worth Rs. 6.1 million during 1972-73 and Rs. 3.7 million in the period under review of 1973-74. There are many other markets which import this fibre from India, such, as, Indonesia, Nigeria, Poland and U.K. For the year 1973-74, indications are that Indonesia will import several times more than what it did in the earlier year; even in the first seven months of 1973-74, this country's purchases amounted to Rs. 3.2 million as compared to Rs. 1.9 million in the entire year of 1972-73.

Countries like Tanzania, New Zealand, and Abu Dhabi also figured in the list of importers during 1973-74, while they did not import any quantity of the product in the preceding year.

EXPORT TRADE IN FEEDING STUFF FOR ANIMALS

India's export trade in feeding stuff for animals (not including unmilled cereals) earned foreign exchange of Rs, 1068 million during the first seven months of 1973-74 (April-October 1973), registering a sharp increase over the exports in the comparable period of 1972-73 at Rs. 354.3 million.

During the complete year of 1972-73, the exports of feeding stuff stood at Rs. 790 million as against Rs. 444 million during the corresponding of 1971-72.

The main items exported under this category were bran pollard sharp and other by-products of cereal, deoiled rice bran, oilseed cake meal and other vegetable oil residue, expeller oil cake of cotton seed, linseed, niger and sesamum and solvent extracted oil cakes of copra, groundnut, linseed, cotton seed, kardi, sesamum, deoiled and defatted oil cake meal, meatmeal, fishmeal unfit for human consumption and food waste and prepared animal food.

The significant destinations were Federal Republic of Germany, Japan, U.K., Italy, Netherlands, Yugoslavia, Poland, Hungary, German Democratic Republic, Czechoslovakia, Bulgaria, France, Spain, Rumania, Philippines, Singapore, Tanzania, Thailand, Denmark, Kenya and Iran.

EXPORT TRADE IN STONE AND GRAVEL

Stone, sand and gravel, building and split monumental stone was exported by India to fetch Rs. 11.7 million during 1972-73 as compared to Rs. 9 million in the corresponding period of previous year. This export trend was maintained in 1973-74 too. During the first seven months of this year (April-October 1973), the export secured Rs. 10 million as against Rs. 5.7 million in the comparable period of 1972-73.

The main items exported in this category were marble, building stones, granite, gypsum plasters, limestone flux for manufacturing lime, sand excluding metal bearing sand, gravel and crushed stone.

Important destinations were Japan, U.K., German Federal Republic, Bangladesh and U.S.A.

INDO-US TRADE

A REVIEW

USA has been one of the foremost trading partners of India ever since 1947. During the five year period, 1951-1955, India's exports to and imports from USA were more or less balanced, the average annual exports, during this period being 242 million and imports $ 268 million. The trade was confined to traditional items like jute goods, tea, manganese ore, lac and mica from India to USA and machinery and transport equipment from USA to India.

During 1956-1960, India's exports to USA suffered a setback, the average annual exports being only $ 195 million per annum. On the other hand, imports from USA began to rise mainly because of imports of wheat, raw cotton and other agricultural products from USA under Public Law 480 programme and additional imports of machinery,t ransport equipment and non ferrous metals under US aid. Imports during this period averaged $ 392 million per annum.

The next five year period—1961-66, witnessed a steady rise in India's exports to USA, the average annual level being $ 282 million and the maximum $ 348 million in 1965. The rise in exports could be attributed to introduction of new Indian products into US market, such as, shrimps, sugar, carpet backing cloth, precious stones and handloom textiles. Imports, however, went up much more to $ 768 million per annum, about double of the earlier level. Almost 42 per cent of the imports were under PL 480, mostly cereals, raw cotton and soya bean oil.

The average annual exports to USA in 1966-68 were $ 310 million. Imports from that country increased to an average of $ 865 million in this period.

In the next three years—1969-71, the average annual exports moved to $ 327 million per annum but imports began to come down. The annual average during this period was $ 553 million. Imports under PL 480 in 1971 accounted for only 31 per cent of the total imports.

In 1972 and 1973, Indian exports to USA stood at $ 427 million and $ 435 million and imports from USA were valued at $ 350 million and $ 525 million in the respective years. Thus in 1972 India enjoyed a favourable trade balance with USA after a lapse of seventeen years. Taken together the trade was more or less balanced. There were no imports under PL-480 during these years.

The figures of trade for the complete year 1973-74 are not yet available. However, on the basis, of figures so far available, Indian exports to USA during the year can be estimated to be of the order of Rs. 3,100 million, a rise of about 13 per cent over the previous year level of Rs. 2,757 million. Jute manufactures which in the Sixties accounted for more or less 50 per cent of total exports to USA, would be around Rs. 1000 million (about 32 per cent). Cotton textiles including handlooms and made-up garments are likely to fetch Rs. 320 million (about 10 per cent). Cashew kernels and marine products would account for about Rs. 270 million (9 per cent) and Rs. 250 million (8 per cent) respectively. Gems and jewellery exports would earn about Rs. 160 million (5 per cent). The value of engineering products exported to USA in 1973-74 is expected to be about Rs. 90 million (3 per cent). The same value is estimated for exports of leather.

Figures for imports from USA for 1972-73 indicate that major items of imports were cereals (Rs. 283 million), machinery (Rs. 521 million), transport equipment (Rs. 225 million), chemical elements (Rs. 93 million), tallow (Rs. 61 million), scientific instruments (Rs. 68 million), fertilisers (Rs. 51 million), pulp (Rs. 48 million), and medicinal products (Rs. 42 million).

During the period 1960-1969, USA was the foremost buyer of Indian goods taking about 16-17 per cent of the total exports and the largest source of imports into India, generally above 30 per cent. Since 1970, the position is changing gradually. Indian exports to various other countries have developed to a larger extent. Although Indian exports to USA were at their maximum in 1973, her share as buyer of Indian goods is now 13.3 per cent, third after Japan (15.3 per cent) and USSR, (13.9 per cent).

According to Indo-American Chamber of Commerce, the value of US direct investment in India rose from $ 305 million in 1970 to $ 330 million in 1971-an increase of 8 per cent over the previous year. The value of direct investments in the manufacturing sector rose from $ 157 million in 1970 to $ 170 million in 1971 and that of petroleum and other industries from $ 148 million to $ 160 million during the same period. Despite this slight increase, the share of India in the total U.S. direct investments abroad was hardly 0.2 per cent.

As regards future prospects of U.S. investment in India, India could produce some of the labour-intensive products in collaboration with U.S. for export to markets in the developing or highly developed countries. U.S. collaboration may also be beneficial in export-oriented industries and areas in which there is a technological gap.

(The figures given in $ are based on U.S. Trade Statistics)

TELEVISION NETWORK IN INDIA

Television coverage in India caters to a population of 25.70 million and an area of 83,000 square miles in the country. Providing programmes over 10 languages and dialects, TV network today comprises Television centres at Srinagar in Jammu and Kashmir (opened on January 26, 1973), Amritsar in Punjab State (opened on September 29) and a relay centre at Poona (opened on October 2, 1973). Delhi and Bombay centres already became operational in 1959 and 1972 respectively.

During 1973-74, the television studios at Akashwani Bhavan, New Delhi were renovated and equipment received in the form of gift from the Federal Republic of Germany were installed. By the end of 1973-74, the number of viewers reached 50,000 from the earlier 36,000. Especially in the areas neighbouring Delhi, the number of viewers increased considerably. With a view to enlarge the range of TV coverage of the Delhi Station, a transmitter at Mussorie which will pick up programmes of Delhi Studio for further transmission, covering a very sizeable sector of Western Uttar Pradesh, is under construction. It is likely to be commissioned by the end of 1974-75.

The Bombay TV Station which became operational from October 2, 1972 is currently catering to the requirements of multi-lingual society of this cosmopolitan city. The programmes of the studio are telecast in English, Hindi, Marathi, Gujarati and pertain to rural audience, industrial workers, children and the youth. With a television tower installed at Sinhagarh on October 2, 1973 and inauguration of a relay centre at Poona, over 10 per cent population of the Maharashtra State came under the range of television programmes of the station.

The Srinagar TV Station which launched an experimental service on January 26, 1973 with a low power temporary antenna, provided service to local population at Srinagar as also in the adjoining areas. The range of the Station increased considerably with the commissioning of a tower at Shankaracharya Hill from November 6, 1973. Srinagar Studio has a unique distinction of being the first Television Centre in India to have a special transmission on Sunday morning. This facility is not available to the rest of the TV stations in the country. The All India Radio has already set up 272 Community Television sets in the Valley. Of these, 95 per cent are in the rural areas. It is proposed to achieve a target of 550 community centres, both for rural and urban viewing.

Comparatively a fresh entrant to the TV network in India, the Amritsar Centre which was commissioned on September 29, 1973 has assumed significance, particularly, in the context of its capability to cater to the requirements of viewers on both sides of Indo-Pak international border. The programmes of the studio are essentially meant for viewers in Punjab and Jammu. It is reported that viewers in Pakistan are watching these programmes enthusiastically and particularly Indian feature films telecast from the station have a special attraction for them, according to the Annual Report of Ministry of Information and Broadcasting for 1973-74.

PRODUCTION TREND IN RUBBER INDUSTRY

India is claimed to be the fourth largest producer of rubber in the world. During January to November 1973, India's total production of both natural and synthetic rubber was of the order of 126,721 tonnes as compared to 121,694 tonnes in the same period of the preceding year. Of the total output, natural rubber accounted for 107,274 tonnes and synthetic rubber 19,447 tonnes. In the same period of 1972, respective shares of both the categories of rubber totalled 95,046 tonnes and 26,648 tonnes.

During April-November 1973, India consumed 111,867 tonnes of natural rubber and 21,022 tonnes of synthetic rubber. Its imports in the period totalled 4,780 tonnes, comprising 117 tonnes of natural rubber and 4,663 tonnes of synthetic rubber. These imports were less as compared to those in the preceding year at 5,983 tonnes (371 tonnes of natural rubber and 5,612 tonnes of synthetic rubber).

During May 1973, the Government of India accorded sanction to export 5,000 tonnes of rubber till the end of December, 1973. Of this, 1,545 tonnes had been exported. During 1972-73, India's exports of crude rubber (including synthetic and reclaimed) were at Rs. 1.50 million as compared to Rs. 0.90 million in 1971-72. Iran Malaysia, Syria and Zambia were the main importers.

India is to set up a crumb rubber plant at Koothayi in Thamarasseri near Calicut. The plant which is estimated to cost Rs. 2 million will be completed within a period of six months. The plant's initial production capacity per day has been placed at 3 tonnes but will be raised to 10 tonnes later, in three shifts. One more such plant is being set up at Kottayam at an estimated cost of Rs. 1.2 million.

DIVERSIFICATION SCHEME IN STEEL PRODUCTION

In view of stepping up production of higher grades of steel, to achieve import substitution, to meet growing home demand and to make better utilisation of scarce inputs/resources viz. scrap and power, the Indian Government has considered the desirability of permitting electric furnace units to produce high grades of steel.

There are, at present, a number of electric furnace units in India, engaged in the manufacture of mainly mild steel ingots/billets. Apart from these, there are also some composite units which have melting as well as rolling facilities, confining them to undertake production of mild steel ingots and billets only and rolled sections and profiles thereof.

The Government of India have accordingly decided that the registered units which manufacture mild steel ingots with or without captive rolling facilities, would be permitted freely to diversify their production to include certain grades of carbon, special and low alloy steels.

In regard to special fields of application and strict specifications to which these steels should conform, it was decided that the diversification can be availed of only by those units which have the requisite production, testing facilities and technical competence to undertake the production of the grades of steels permitted under the present relaxation. It will be obligatory for such units to conform their production to ISI specifications.

During the first three quarters of 1973-74 (April-December 1973), production of tool, alloys and special steel was estimated at 0.25 million tonnes as against the total production during the full year of 1972-73 at 0.43 million tonnes. During 1968-69, the production was only 0.20 million tonnes. In the same period (April-December 1973), India's production of steel ingots was estimated at 4.96 million tonnes while that of saleable pig iron was 1.21 million tonnes. During the period, production of saleable steel by five main steel producing units namely, Bhilai Steel Plant, Durgapur Steel Plant, Rourkela Steel Plant, Tata Iron and Steel Company and Indian Iron and Steel Company totalled 3.21 million tonnes. Of the total output, Bhilai plant accounted for the lion's share at 1.28 million tonnes, followed by Tata Iron and Steel Company at 0.89 million tonnes, Rourkela plant 0.52 million tonnes, Durgapur plant 0.26 million tonnes and Indian Iron and Steel Company nearly 0.26 million tonnes.

The total production of finished steel during the period under review (April - December 1973) was estimated at 3.5 million tonnes as against 5.5 million tonnes during the entire year of 1972-73.

Production of ingot steel in India totalled 6.13 million tonnes in 1972-73. It was only 4.18 million tonnes in 1961-62. During 1972-73, the output of saleable pig iron was estimated at 1.37 million tonnes while that of tool, alloy and special steel was of the order of 430,360 tonnes. Finished steel is produced in India in a variety of forms, such as, light, medium and heavy structurals, heavy and light rails, black sheets (hot rolled and cold rolled), steel bars, steel rods, steel wires (black, galvanised and others), hoops and strips and tin plates.

IMPORT SUBSTITUTION IN PHARMACEUTICALS

Drugs and Pharmaceutical Industry in India has to its credit the development of vital drugs and formulations every year. A number of drugs and medicines which were being imported into the country hitherto, are being produced indigenously, resulting in saving of large sums of foreign exchange every year.

The import substitution endeavour of one of the pharmaceutical manufacturing units in Western India, M/s. E. Merck Pharmaceutical and Chemical Complex at Taloja near Bombay, deserves mention in this context. The Complex for the first time in India would commence production of the vitamins F and P (rutin) which are used in the manufacture of a variety of vital drugs and medicines. The plant which is expected to go on production stream shortly, is estimated to save foreign exchange to the tune of about Rs. 10 million every year.

Apart from these vitamins, the plant is also to undertake manufacture of 250 tonnes of sophisticated, fine and laboratory chemicals, reagents, diagnostic aids, 60,000 litres of injectables and 30,000 kilograms of medicinal syrups.

India's pharmaceutical industry, in recent years, is making significant strides in production as well as exports. During 1972-73, total output of the industry was of the order of Rs. 3600 million as compared to Rs. 1000 million in 1962. The exports also crossed the Rs. 100 million mark during 1972-73 which improved sizeably as compared to the export value at only Rs. 40 million in 1968-69.

Any step-forward in the national context of import substitution is significant from the view-point that the economy continues to depend on import trade for a variety of drugs and pharmaceuticals. In 1972-73, the import bill totalled about Rs. 230 million.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

HIGH DRAUGHT CONTINUOUS KILN FOR BURNING BUILDING BRICKS

The only continuous kiln being used by the building brick industry in India is the Bull's trench kiln. This kiln is well known for its low thermal efficiency and low quality of the products burnt in it. Moreover, this kiln works only during the dry season. At present, all the mechanized plants established in India have been imported, involving heavy drain on foreign exchange resources. In all the mechanized works, Haffmann kilns have been constructed by foreign experts for burniug bricks, the entire design and the technical 'know-how' being imported.

In order to eliminate such drawbacks and stop the drain on foreign exchange, the Central Building Research Institute (CBRI), Roorkee, has successfully designed and developed a high draught continuous kiln with a burning capacity of 15,000 bricks per day. Several firing rounds have since been conducted to acquire complete know-how of the process. The drawings and estimates for such a kiln and also for kilns upto capacity of 30,000 bricks per day can be supplied to the industry.

The newly designed kiln has many novel features and specific advantages. This kiln (i) can be burnt throughout the year, (ii) is thermally as efficient as Hoffmann and related kilns commonly used in advanced countries, (iii) cost much less to construct, e.g. a kiln with a capacity of 15,000 bricks per day would cost about Rs. 55,000/- including shed as compared to Rs. 2 lakhs or more for building a Haffmann kiln of equivalent capacity.

Basically, the kiln is an archless, ton-fed, coal fired continuous kiln in which the fire follows a zig-zag path. The setting area is divided into a number of chambers by partition walls. The partition walls are built with unfired bricks and are dismantled at the time of unloading the bricks from a chamber. About 7500 bricks can be loaded in each chamber and a daily utput of 15,000 bricks can be secured. Similar kilns f enlarged dimensions can be designed for burning up o 30,000 bricks per day.

Draught is provided by a fan and the products of combustion are channelised through a system of flues, he flow of gases being controlled by suitable dampers.

In actual firing runs, the kiln has proved to be highly efficient. Fuel consumption has been as low as 120 kg. per 1000 bricks compared to 180 to 200 kg. per 1000 bricks normally consumed in Bull's kilns. The quality of the product is also highly satisfactory with more than 80 per cent of the bricks being in Class I (tested in accordance with IS Specification 1077 : 1966-1st revision) and rejects were below 5 per cent. This kiln has already been licensed to a number of brick manufacturers.

The present production of bricks (roughly estimated at 20,000 million per annum) lags far behind market requirements and the gap is likely to widen further in the next 5 or 6 years when the demand for bricks is estimated to exceed 50,000 million per annum. This large expansion of the brick industry and rising cost of bricks is a fair measure of the expected demand for the improved CBRI kiln which offers several advantages over the traditional Bull's kiln. The gradual introduction of mechanization in the brick industry is also likely to accelerate the adoption of the CBRI kiln by the industry.

Common building bricks of class I quality are to be used in all brick work. No fire brick is required for any part of the construction. Except in the foundations, where lime concrete is used, the entire brick work is to be constructed with mud mortar. The shed over the kiln is supported on tabular trussess and corrugated iron sheets are used as cover. The trusses are supported on steel stanchions.

Parties interested in obtaining a licence for erecting the CBRI developed kiln may contact the Secretary, National Research Development Carporation of India, 61, Ring Road, Lajpat Nagar-III, New Delhi-24.

NEW HYV PADDY STRAIN DEVELOPED

A new HYV paddy strain, 'Vaigai', has been developed at the paddy breeding station of the State Agricultural University, Coimbatore.

'Vaigai' matures in 115-120 days after sowing, grows to a height of 3 feet, requires moderate doses of fertiliser compared to earlier ones and has a yield which is 15-19 per cent more than another HYV, Kanchi. It is more resistant to blast blight and green leaf hopper and yields 2.25 tonnes per acre. The grain is of finer quality.

'Vaigai' is recommended for cultivation in most of the southern districts of the Tamil Nadu State and can be grown in all the three seasons of the year.

Meanwhile, the agricultural engineering research division of the university has evolved new types of implements to help the ryot in his operations. One is a thresher driven by electric power whose output is 4800 kg. in eight hours. The saving in threshing cost over the manual operation is about 40-50 per cent.

FUELLING MACHINE HEAD FOR ATOMIC REACTOR

An extremely sophisticated fuelling machine head for the second atomic power reactor at Rana Pratap Sagar in Rajasthan has been manufactured by the Department of Atomic Energy. This achievement leads India towards self-reliance in the atomic power programme.

The power reactor component has over 500 sensitive parts and its fabrication at the central workshops of the Bhabha Atomic Research Centre, Bombay, has saved the country Rs. 3 million in foreign exchange, according to the Department's Annual Report for 1973-74.

1974. Many units private and in the public sectors have evolved new models based on the know-how developed by them. Some units have already entered export markets.

Computors

The planning of computer industry is aimed at self-sufficiency with reference to requirements of CPU's (central processor units) for the mini computors and medium computors, production of a major part of the requirements of peripherals and all the software with some surplus for exports.

Research and Development

A number of projects, such as, those concerned with the development of TR switches in X-band, TV camera lens, antenna for community receivers and front end convertors for reception of TV signals directly from satellites; solid state storage oscillioscopes etc. have been completed successfully. Some of the items are already under production and others are at various stages of being brought under production. A pilot plant for growing silicon crystals has also been set up. Development work on computors TDC-12 and TDC-312, TDC-16 and TDC-32, special purpose high power tubes, integrated circuits and TR switches in S-band is in progress.

Exports of electronic items are expected to reach an aggregate value of above Rs. 75 million in 1973-74, thereby registering an increase of nearly 25 per cent over the previous year. The year under review, which is the last year of the Fourth Plan, is expected to be a landmark in so far as electronic exports are concerned. The number of significant exporters of electronic items has increased more than seven-fold from a mere 5 at the beginning of the Fourth Plan to about 35. The important electronic products exported have also increased in number. Starting with just radios and kits at the beginning of the Fourth Plan, the end of the Fourth Plan has witnessed a much wider range of products being exported, including radios, amplifiers, car radios, laboratory electronic instruments, desk calculators, data processing equipment, TV sets, semi-conductor devices, ceramic capacitors, electrolytic capacitors, carbon film resistors, potentiometers, switches and special electronic grade cables. Thus, the Fifth Plan commences with an export base in electronics, fairly strengthened in terms of the number of exporters as well as the export range. Significantly, Indian electronics are being exported mostly to advanced countries. All these factors go to show that export capabilities of the country in electronics are growing and that future growth of exports can be quite appreciable. The target is a three-fold increase in the exports during the Fifth Plan period, from Rs. 75 million per annum at the end of Fourth Plan to Rs. 230 million per annum at the end of Fifth Plan.

As a separate measure towards promotion of electronic exports, the Santacruz Export Processing Zone was set up by the Government towards the end of 1972-73. In the year 1973-74, streamlined procedures have been adopted to clear schemes for the Zone expeditiously. The number of schemes cleared by the end of March, 1974 is expected to be over 35 which would account for nearly Rs. 250 million per annum by way of exports when these units go into full producion. It is expected that the Zone would start functioning fully in the year 1974-75. ☐

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STREET LIGHT FIXTURES TO INDONESIA

India's exports of electric lamps including flourescent tubes and parts totalled nearly Rs. 3.80 million in 1972-73. Of this, the export value of flourescent tube lamps alone was Rs. 2.31 million. Czechoslovakia, Iran, Sudan and Singapure were the major importers. Flourescent tube parts were supplied to Nigeria, Ethiopia, Iraq and Kuwait, while Bangladesh, Netherlands and Arab Republic of Egypt were the leading buyers for other lamp parts.

M/s. Philips India Ltd. (Philips House, 7, Justice Chandra Madhab Road, Calcutta), have recently executed an export order for supply of 2,300 pieces of mercury vapour and sodium vapour street light fittings to Indonesia. Valued at Rs. 0.85 million, the consignment supplied is stated to represent one of the largest exports of street light fittings from India.

A public lighting expert from Philips India will also soon visit Indonesia for assistance in the installation of the fittings.

Total exports of the Bombay firm amounted to about Rs. 12 million in 1972-73, registering an increase of 15 per cent over the exports in the preceding year.

With factories at Calcutta, Poona, Bombay and Kalwa, the company's production profile currently includes incandescent, flourescent, mercury and sodium lamps; light fittings and accessories, radios, cinema projection and sound equipment, public address equipment, hearing aids, infraphils, water heaters, television and tele-communication equipment, radio components, electronic tubes and transistors, electronic measuring, process and quality control equipment, scientific equipment, X-ray, electro-medical, hospital and dental equipment. By virtue of agreement concluded with N.V. Philips Goleilampenfabrieken, Eindhoren of Netherlands, Philips India enjoys the benefit of their research facilities and the vast technical know-how in various fields.

Alongside appreciable overseas supplies, the electric lamp industry in India has progressed in the production field as well. The production of GLS and other lamps increased to around 128 million numbers in 1972 from 110.58 million numbers in 1971. The installed capacity during the two years was 128.45 million numbers and 83.40 million numbers. Production of flourescent tubes also improved to 12.35 million numbers in 1972 against 10.56 million numbers in 1971. There are nine units with a total installed capacity of 12.06 million numbers in this line. The production of miniature lamps during 1971 was 39.34 million numbers and rose to 41 million numbers in 1972. The installed capacity of the seven units in the line was of the order of 40 million numbers in 1972.

INDIAN DYESTUFFS POPULAR ABROAD

Though till lately a significant importer of dyeing, tanning and colouring material, India has in recent years emerged as a competent supplier of these products. These exports fetched Rs. 92.65 million in 1972-73 and Rs. 54.50 million in the preceding year.

In this context of export effort, M/s. Amar Dye-Chem Ltd. (Rang Udyan, Sitaladevi Temple Road, Mahim, Bombay-16), contribute sizeably. Their exports exceeded Rs. 10 million for the first time in 1973. The Company's performance during 1974 is expected to improve further considering that their export earning for the first four months of the year (January-April 1974) totalled Rs. 6.8 million, which represents more than cent per cent increase over the export earning at Rs. 3 million during the corresponding period of 1973. Recently, the company received an award from the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council, Bombay for its export performance in 1971-72.

The Bombay firm is mainly engaged in the manufacture of basic and acid dyes, naphthols and fast bases as well as reactive dyes, pigment colours and optical whiteners.

Alongside the progress in the export field, the dyestuffs industry in India has developed competence in the manufacture of diverse materials, such as, azo dyes (acid, direct and mordant), basic dyes, disperse dyes, naphthols, fast colour bases, optical whitening agents, organic pigment colours, reactive dyes, sulhur dyes, vat and other dyes.

The industry is technology-intensive and there has been a substantial degree of foreign investment and collaboration in the context of its development and diversification. However, foreign collaboration is not preferred now for the production of many of dyestuff groups. All the same, the industry depends on import of raw materials, although the imports are confined to only certain special items. The development of basic dyes and azo dyes is reserved for the small scale sector.

During the Fifth Five-Year Plan ending 1978-79, sizeable expansion of production capacity is envisaged for mordant dyes (excluding acid and direct), disperse dyes, fast colour bases, naphthols, optical whitening

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agents, reactive dyes, sulphur dyes and vat dyes. The official policy is to develop capacity for these industries in terms of processing from the basic stage of the raw materials to the final dye. In the organised sector, 21 units were engaged in the manufacture of dyestuffs and intermediates in 1972. The production of dyestuffs in the year was 14,575 tonnes as compared to 12,885 tonnes in 1971. The installed capacity and actual production of various varieties of dyestuffs in 1972 was : Azo dyes 3133 tonnes and 2364 tonnes (Rs. 56 million); Acid Direct dyes (other than Azo) 538 tonnes and 236 tonnes (Rs. 16 million); Basic dyes 1137 tonnes and 638 tonnes (Rs. 23 million); Disperse dyes 480 tonnes and 235 tonnes (Rs. 15.30 million); Fast colour bases 1410 tonnes and 1000 tonnes (Rs. 29.70 million); Naphthols 1285 tonnes and 1330 tonnes (Rs. 46.80 million); Organic pigment colours 2565 tonnes and 1605 tonnes (Rs. 61.30 million); Pigment emulsions 1850 tonnes and 2360 tonnes (Rs. 67.60 million); Reactive dyes 845 tonnes and 806 tonnes (Rs. 57 million); Stabilised azoics 595 tonnes and 180 tonnes (Rs. 7.50 million); Sulphur black 2490 tonnes and 1580 tonnes (Rs. 9.10 million); sulphur dyes other than sulphur black 108 tonnes and 18 tonnes (Rs. 0.4 million) and Vat dyes 1440 tonnes and 1135 tonnes (Rs. 172.20 million).

Recently, production of new additional intermediates like dimethylaniline has also commenced. The other new ranges of production established during 1972 included toly peri acid, ISO-violanthrone, leuco quinizarine and dimethylaniline.

HANDICRAFTS IN EXPORT TRADE

Side by side the progress being made in the export of non-traditional products, Indian exporters continue to avail of the traditional sector like handicrafts and handlooms to add to the foreign exchange earning of the country. The export value of handicrafts, excluding gems and jewellery, totalled Rs. 518 million in 1972-73. Among important items which contributed to this earning were woollen carpets (Rs. 214.50 million), art metal wares (Rs. 86.50 million), handprinted textiles (Rs. 48.3 million) and wood ware (Rs. 40.4 million). In order of the value of their intake, West European and American countries were the major export destinations, followed by Asian and Oceanian countries and East European countries.

In keeping with the trend in exports of handicrafts, M/s. Surya Trading Corporation of India Pvt. Ltd. (B 59/2, Naraina Industrial Area, Phase II, New Delhi) succeeded in stepping up their exports of handicrafts to nearly Rs. 1.30 million in 1973-74 as compared to Rs. 1 million in the preceding year and a mere Rs. 0.64 million in 1971-72. The exports were directed mainly to USA and Canada.

Besides handicrafts, the Delhi firm's exports to USA and Canada also included limited supplies of engineering goods and incenses. USA, additionally, purchased cotton bed spreads from the firm which also exported some sports goods to Mauritius and Kuwait. The firm's total exports for the year amounted to Rs. 2 million as against Rs. 1.45 million in 1972-73 and Rs. 1.22 million in 1971-72.

Total production of handicrafts was estimated at Rs. 4,000 million for the year 1972-73. During the Fifth Five-Year Plan (1974-75 to 1978-79), it is targetted to increase to a level of Rs. 6,000 million while exports in the period are to be raised to Rs. 2,000 million.

EXPORT PERFORMANCE AND POTENTIAL

BOOST IN RAYON AND SYNTHETIC TEXTILES

India's export trade in rayon and synthetic textiles has nearly trebled in 1973-74 as compared to that in the preceding year. As against Rs. 111 million in 1972-73, the exports shot up to as much as Rs. 320 million in the following year, according to the Silk and Rayon Textiles Export Promotion Council, Bombay. The exports surpassed the target set for the year at Rs. 180 million by a large margin. The export target for 1974-75 has been placed at Rs. 500 million.

Export trend in this line of manufacture has been witnessing steady increase. The export values during the preceding five years were : Rs. 54.20 million in

1969-70, Rs. 74.20 million in 1970-71, Rs. 98.40 million in 1971-72, Rs. 111 million in 1972-73 and Rs. 320 million in 1972-73.

Rayon and synthetic fabrics continued to be the principal category of export dynamism during 1973-74. These secured Rs. 268.80 million during the year. The exports shot up to this level from only Rs. 35.80 million in 1969-70, Rs. 52.40 million in 1970-71, Rs. 74.80 million in 1971-72 and Rs. 98 million in 1972-73.

Garments and made-ups brought in Rs. 9 million in the year under review. Barring the year 1969-70, when the exports fetched as much as Rs. 13.80 million, the range of export earning fluctuated between Rs. 4 million and Rs. 9 million.

Exports of rayon tyre yarn and cord were of the order of Rs. 9.2 million during 1973-74. In the earlier years, the export values were : Rs. 4 million in 1969-70, Rs. 11.40 million in 1970-71, Rs. 12.40 million in 1971-72 and Rs. 4.70 million in 1972-73.

The hosiery and knitwear sector earned Rs. 1 million (1973-74) against Rs. 0.8 million in 1972-73. The exports during 1971-72, however, secured Rs. 2.70 million as against only Rs. 100,000 in the preceding year (1970-71).

India's man-made fibre industry has been registering steady strides in production year after year. During 1973, the output of a variety of staple fibres was : viscose staple fibre 61.87 million kgs. as against 70.34 million kgs. in 1972; polyester staple fibre 11.55 million kgs. against 6.6 million kgs. and acetate staple fibre 0.57 million kgs. against 0.36 million kgs.

In the area of filament yarn sector, production during the year was : rayon viscose 37 million kgs. against 39.66 million kgs. (1972); staple fibre yarn 42.40 million kgs. against 57.60 million kgs. and acetate 1.41 million kgs. against 1.54 million kgs. During January-August 1973, the production of nylon filament yarn and that of polyester filament yarn was of the order of 10.75 million kgs. and 1.83 million kgs. respectively as against 11.70 million kgs. and 0.55 million kgs. during the entire year of 1972.

EXPORT TREND OF BASIC CHEMICALS AND PHARMACEUTICALS

Indian exports of basic chemicals, pharmaceuticals and soaps totalled Rs. 698 million during 1973-74 against Rs. 415 million in 1972-73 and Rs. 352 million in 1971-72, according to the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council (Jhansi Castle, 7, Cooperage Road, Bombay-1).

Exports of drugs, pharmaceuticals and fine chemicals was of the order of Rs. 343 million in 1973-74 as compared to nearly Rs. 135 million in the preceding year. The export value of dyes, intermediates, alcohol and coal tar chemicals has also increased substantially to the level of Rs. 102 million as compared to Rs. 60 million in the comparable years. The contribution of inorganic chemicals, organic chemicals and agro-chemicals respectively was Rs. 66.5 million, Rs. 13.1 million and Rs. 5 million in the year 1973-74. Their exports in 1972-73 was Rs. 52 million, Rs. 13.6 million and Rs. 1.4 million respectively.

The group of glycerine, soaps, detergents, cosmetics and toiletries has witnessed a decrease in exports at the level of Rs. 36 million as compared to Rs. 48 million in the corresponding years. The export value of agarbattis improved, however, to Rs. 18 million as against Rs. 16 million. Essential oils also improved exports to fetch Rs. 52 million as compared to Rs. 40 million.

Medicinal castor oil was a major export item and its export value totalled Rs. 211 million during 1973-74. U.K., U.S.A., U.S.S.R., Japan, Netherlands and France were the major importers of the oil.

Agarbattis (incense-sticks) fetched nearly Rs. 18 million in 1973-74 as compared to Rs. 16 million in the year that preceded. U.K., U.S.A., Ethiopia, Singapore and Malaysia were the leading buyers.

Hydrochloric acid is another item which has sizeably improved its exports. Its exports in 1973-74 amounted to Rs. 16 million as compared to only Rs. 9.7 million in the preceding year. Saudi Arabia, Dubai, Kenya, Qatar and Bahrein were the major markets.

Lemon grass oil is yet another item where international demand has picked up considerably during 1973-74 in which year its export value stood at over Rs. 27 million, as compared to Rs. 9.5 million in 1972-73. Hungary, U.S.S.R., U.K. and U.S.A. were the principal customers.

Among a wide range of basic chemicals and pharmaceutical products which contributed sizeably towards the overall increase in the country's export range, special mention can be made of nicotine salts, quinine salts, sulpha drugs, menthol, sulphur dyes, organic pigments, carbon black, bleaching powder, rubber chemicals, psyllium seeds, senna leaves and pods, hydrogenated caster oil, caustic potash and sodium borate.

TRENDS IN INDIA'S EXPORT TRADE

India's total exports during the first three quarters of 1973-74 (April-December 1973) were up by 21.6 per cent over the level in the corresponding period of 1972-73, the actuals being Rs. 16.92 billion and Rs. 13.87 billion respectively.

Almost all major commodities in the export trade recorded increases over the last year's levels except the two traditional items, namely, jute goods and tea which were actually down by 5 per cent. Exports of tea during April-December 1973 earned Rs. 1155 million against Rs. 1201 million in the corresponding period of 1972-73. The respective figures for exports of jute goods were Rs. 1838 million and Rs. 1932 million.

The highest increase in exports was recorded in oilcakes which fetched Rs. 1203 million in the period under review against Rs. 410 million in the previous year, a rise of almost 200 per cent.

Exports of cotton manufactures were up by 76 per cent (Rs. 2045 million as compared to Rs. 1256 million). All the items grouped under this head performed well except cotton yarn, the export of which decreased by about 45 per cent of the level in the previous year. Exports of mill-made cloth during April-December 1973 were valued at Rs. 1117 million against Rs. 598 million in the same period of the preceding year, handloom cloth Rs. 258 million against Rs. 146 million, readymade garments Rs. 376 million against Rs. 188 million, hosiery Rs. 15 million against Rs. 7 million and other made-up items of cotton Rs. 206 million against Rs. 146 million. Exports other than that of cotton textiles, such as, silk and man-made fabrics were also higher in 1973-74 at Rs. 833 million against Rs. 648 million in 1972-73.

Sugar and spices have also recorded handsome gains. The export figures of the two items in the comparable periods were Rs. 218 million (Rs. 98 million) and Rs. 302 million (Rs. 177 million). Although exports of tea were marginally less, exports of coffee did well to fetch Rs. 380 million over Rs. 227 million in the preceding year. Exports of fish were up from Rs. 405 million to Rs 602 million and cashew from Rs. 565 million to Rs. 630 million.

Engineering products, leather, mineral ores, handicrafts and tobacco have recorded comparatively modest gains. Their exports in the periods under review in 1973-74 as compared to the preceding year are: engineering products Rs. 1217 million and Rs. 1035 million; leather Rs. 1325 million and Rs. 1245 million; mineral ores Rs. 1180 milllon and Rs. 1113 million; handicrafts Rs. 1068 million and Rs. 859 million and tobacco Rs. 510 million and Rs. 503 million.

Directionwise, Indian exports to all regions have improved with the exception of Africa, where a decline of about 9 per cent has been recorded. The highest rate of increase is 37.5 per cent in case of ECAFE countries where exports went up from Rs. 3493 million to Rs. 4781 million. Exports to other Asian countries went up from Rs. 577 million to Rs. 783 million indicating a rise of 35.7 per cent. The progress in exports to West European countries (ECM and EFTA) has also been of the same order. Exports increased from Rs. 3156 million to Rs. 4231 million in 1973-74, a rise of 34.1 per cent. Exports to Americas (both North and South) recorded a comparatively moderate increase of 15.6 per cent (Rs. 2731 millon over Rs. 2348 million). The rate of increase in exports to East European countries was almost negligible at less than 4 per cent (from Rs. 3491 million to Rs. 3540 million).

The four most prominent buyers of Indian products are Japan, USA, USSR and UK. These four countries among themselves account for more than half of India's export trade - 53 per cent in April-December 1973 and 52 per cent in April-December 1972. Japan improved its share of 11 per cent in April-December 1972 to 14.7 per cent in April-December 1973 (Rs. 1549 million to Rs. 2471 million). UK's share also went up from 9.7 per cent to 11 per cent. On the other hand, USA's share came down from 15 per cent to 14.3 per cent although in absolute terms, the exports in the latter year (April-December 1973) were better at Rs. 2413 million against Rs. 2075 million in the preceding period. In case of USSR, the value of India's exports was down from Rs. 2267 million in April-December 1972 to Rs. 2193 million in April-December 1973, bringing down its share from 16.3 per cent to 13.0 per cent.

During the first nine months of 1973-74, the exports increased by Rs. 3000 million. If the rising trend registered so far continues as it is expected, the total exports during 1973-74 would be about Rs. 23,500 million, about Rs. 3500 million more than the target set for the year.

EXPORT POSITION OF COTTON TEXTILES

In the first three quarters of 1973-74 (April-December 1973), cotton textiles fetched Rs. 2045 million, about 64 per cent higher than the amount (Rs. 1256 million) earned in the corresponding period of the preceding year. In comparison, jute manufactures, formerly the leading commodity, went down from Rs. 1932 million in April-December 1972 to Rs. 1838 million in April-December 1973 and tea, the next best, from Rs. 1201 million in 1972 (April-December) to Rs. 1155 million in 1973 (April-December).

Cotton textiles consist of a number of sub-items. The most prominent among them are cotton fabrics (mill-made) which netted Rs. 1173 million in April-December 1973 over Rs. 598 million only in April-December 1972. Handloom fabrics improved from Rs. 146 million in the preceding year to Rs. 258 million in April-December 1973. Export of cotton readymade garments which provide a better unit value and employment opportunities in India almost doubled from Rs. 188 million in April-December 1972 to Rs. 376 million in April-December 1973. Other made-ups of cotton, such as, bed covers and towels earned Rs. 206 million in 1973 as compared to Rs. 146 million in the previous year. Even exports of hosiery have more than doubled to Rs. 15 million in April-December 1973 from Rs. 7 million in the earlier period. However, in case of cotton yarn, exports declined from Rs. 171 million in April-December 1972 to Rs. 73 million in the comparable period of 1973.

Apart from cotton textiles, other varieties of textiles are also exported from India. Earnings from these exports in April-December 1973 were Rs. 833 million against Rs. 648 million only in the previous year. Taking all textiles together (excluding jute), exports in April-December 1973 amounted to Rs. 2878 million, accounting for 17 per cent of the total exports during this period. The percentage share in the previous year was only 13.7 per cent, the actual figure being Rs. 1904 million.

In 1971-72, exports of all varieties of textiles from India earned Rs. 2032 million (12.7 per cent of total exports) which improved to Rs. 2658 million in 1972-73, accounting for 13.5 per cent of exports in that year.

IMPROVEMENT IN WOOL AND WOOLLENS

At about Rs. 385 million, India's exports of wool and woollens recorded a moderate increase during the first three quarters of 1973-74 (April-December 1973) over the exports valued at Rs. 364 million in the corresponding period of the preceding year (April-December 1972).

In the export earning during April-December 1973, the share of carpets, druggets and numdahs was nearly Rs. 180 million as compared to a little over Rs. 152 million in the same period of 1972. USA was the largest buyer which bought worth Rs. 61.35 million and Rs. 33.73 million in the comparable periods. Federal Republic of Germany at Rs. 42.37 million was the second important destination. Its imports, however, were reduced as compared to its intake last year at Rs. 61.45 million. UK imported worth Rs. 21 million against Rs. 15.60 million; Canada Rs. 15 million against Rs. 8 million and Australia Rs. 7.38 million against Rs. 4.83 million.

Woollen hosiery also witnessed a rising trend, having netted Rs. 140.80 million as compared to Rs. 137 million. USSR was the leading buyer, having purchased worth Rs. 104.35 million as against Rs. 103.75 million. Czechoslovakia was among other prominent destinations.

Raw wool earned Rs. 38.60 million against Rs. 37.55 million. UK with its purchases at Rs. 24.90 million in April-December 1973 was the principal buyer, followed by USSR (Rs. 8.50 million), Belgium (Rs. 3.80 million) and Netherlands (Rs. 1.20 million).

Shawls and lohis constituted yet another area of increased export turnover during the period under review. The exports more than doubled to earn Rs. 3.60 million compared to only Rs. 1.65 million. Saudi Arabia was the main market.

The exports of woollen readymade garments were valued at Rs. 5.40 million compared to Rs. 12 million earned in the earlier period while woollen blanket exports were Rs. 2.38 million compared to Rs. 7.42 million. Woollen worsted and mixed fabrics fetched Rs. 13.90 million against Rs 14.95 million.

During 1972-73, the export trade in wool and woollen goods totalled Rs. 481.40 million. During the year, varietywise break up was : carpets and druggets Rs. 207.65 million; woollen hosiery Rs. 163.76 million; raw wool Rs. 60.15 million; woollen worsted and mixed fabrics Rs. 17.15 million; woollen blankets Rs. 16.60 million; woollen readymade garments Rs. 12.96 million and shawls and lohis Rs. 2.26 million.

During 1972, varietywise output was as follows : wooltops 12,491 kgs; shoddy 3761 kgs; woollen carpets 20,086 kgs and worsted 14,918 kgs (wear 9653 kgs, hosiery 2843 kgs and knit 2422 kgs). In the area of woollen fabrics, wearables accounted for 25,485 metres while the share of non-wearables was 3,335 kgs. The total production of hosiery sector was of the order of 2132 kgs.

COMMERCIAL COOPERATION WITH FINLAND

Pursuant to the discussions that were held between the Commerce Minister of India and the Foreign Trade Minister of Finland last month, it was agreed to strengthen economic relations between the two countries and establish an Indo-Finnish Joint Commission for this purpose. The Commission is to identify areas of cooperation between the two countries and recommend suitable measures for achieving this goal. The two Ministers reviewed the possibility of Indo-Finnish industrial and technical cooperation as well as exploring scope for joint ventures.

Finnish authorities agreed to explore possibilities for continued and accelerated shipments of Finnish newsprint to India and for supply of copper and copper products from Finland to India. The Finnish Minister of Foreign Trade also indicated that Finnish industry was interested in the possibilities offered by the expanding Indian market, particularly in the fields of pulp and paper industries including paper mill projects and technology, electric and cable industries and ship building.

It was emphasised during these discussions that special attention should be devoted towards increasing the flow of commercial information between the two countries. To this end, exchanges of trade delegations, both at the official and private levels and participation by the two countries in each other's trade fairs and exhibitions were regarded as important instruments for increasing trade between the two countries.

India's exports to Finland during 1972-73 were valued at Rs. 10.4 million against Rs. 4.4 million in the preceding year. The rising trend in the exports to Finland has been maintained in 1973-74 when exports during the first seven months (April-October 1973) amounted to Rs. 8.8 million over the level of Rs. 4.3 million in the corresponding period of 1972-73. The major product range of exports in 1972-73 comprised made-up garments (Rs. 4 million) and cotton manufactures (Rs. 4 million).

India imports from Finland newsprint (Rs. 7.2 million in 1972-73), paper and paper board (Rs. 8.2 million) and machinery mainly for paper mills (Rs. 6.2 million). The total imports in 1972-73 were Rs 25.3 million.

EXPORT TRADE IN CHOCOLATE

Indian chocolate and other food preparations containing cocoa or chocolate secured Rs. 4.7 million during 1972-73, registering an increase of nearly Rs. 1 million over the export value in the preceding year. This item maintained steady export uptrend during the first seven months of 1973-74 (April-October, 1973) as the export figure touched Rs. 4.4 million in comparison with Rs. 1.3 million during the corresponding period of last year, registering a rise of Rs. 3.1 million.

U.K., Dubai, Czechoslovakia and Nepal were the significant destinations.

CRUSHED BONE EXPORTS UP

India's export trade in crushed bones brought in foreign exchange worth Rs. 53.47 million in 1972-73. As compared to this, the export value was Rs. 51 million in 1971-72 and Rs. 45.74 million in 1970-71.

During the first nine months of 1973-74 (April-December, 1973), the export earning from this item was Rs. 48.84 million as against Rs. 43.60 million in the corresponding period of 1972-73.

Major importers of the product are U.K., Belgium, Japan, German Democratic Republic, Hungary, Bulgaria, German Federal Republic, Czechoslovakia, Netherlands, Rumania, U.S.S.R., U.S.A. and Singapore.

During the first nine months of 1973-74, U.K. imported worth Rs. 12.20 million, Belgium Rs. 11.76 million, Japan Rs. 7.62 million, France Rs. 4.31 million, German Democraric Republic Rs. 4.30 million, Hungary Rs. 2.15 million, Bulgaria Rs. 3.14 million, German Federal Republic Rs. 1.12 million, Czechoslovakia Rs. 1.05 million, Netherlands Rs. 0.67 million, Rumania Rs. 0.32 million and USSR Rs. 0.01 million.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PRODUCTION PROGRESS IN HEAVY ENGINEERING

The heavy engineering sector occupies a significant place in India's industrial infrastructure. Among a large number of firms that are contributing to the growth of this vital sector, the role of M/s. Heavy Engineering Corporation (HEC), Ranchi, Bihar, in the field of production as well as in securing tenders, both from domestic and overseas firms is indeed noteworthy.

HEC has been constantly achieving production growth over the years. The year 1972-73 witnessed the Corporation's output performance reaching an all time high in the preceding three years. During the year, its total production was 45,261 tonnes as against 36,915 tonnes in 1971-72 and 28,489 tonnes in 1970-71. In terms of value, the production in the respective three years was Rs. 511 million, Rs. 421 30 million and Rs. 310.45 million.

HEC has three units : the Forge Foundry Plant (FFP), the Heavy Machine Building Plant (HMBP) and the Heavy Machine Tool Plant (HMTP). Of the total production of HEC during 1972-73, the Foundry Forge Plant (FFP) accounted for 29,415 tonnes (Rs. 121.35 million), the Heavy Machine Building Plant (HMBP) 36,089 tonnes (Rs. 374.27 million) and the Heavy Machine Tool Plant (HMTP) 1037 tonnes (Rs. 14.65 million). During 1971-72, the respective shares of the plants were 20,954 tonnes (Rs. 109.95 million), 30,430 tonnes (Rs. 259.40 million) and 1102 tonnes (Rs. 16.25 million).

During the year under review, the Foundry Forge Plant manufactured propeller shaft and intermediate shafts for the ship-building industry. The piece weight of the propeller shaft was 24 tonnes and of the intermediate shaft was 18 tonnes and these were successfully forged in 6000 tonnes press. Besides these, a typical pot casting for Gomia Explosives Plant of about 10 tonnes piece weight, gerth gear of piece weight 25 tonnes, mill head weighing 20 tonnes for cement mill, butterfiy valve of dia 5 m and piece weight 25 tonnes for electrical industries (casted in steel foundry), tyre casting requiring 147 tonnes of liquid metal, francis runner casting requiring 35 tonnes of molten metal of stainless steel (it was a developmental item) were also manufactured.

The Heavy Machine Building Plant's production profile included blast furnace of 2000 cubic metres; excavators of 4.6 cubic metres capacity; bed plate of 1000 HP diesel engine; scrap charging machine of 9 cubic metres capacity; cyclotron magnet yoke weighing 95 tonnes (for Atomic Energy Commission, Trombay); jaw crusher weighing 282 tonnes capable of crushing iron ore, rock etc. from 1200 mm to 300 mm size; tertiary cane crusher wighing 100 tonnes capable of crushing iron ore, limestone etc. from 250 mm to 10 mm size, and ladle crane of 180 tonnes capacity for handling hot metal ladle.

The Heavy Machine Tool Plant initiated measures for diversifying its product range by including in its schedule manufacture of railway machine tools in collaboration with a West German firm. The plant manufactured two machines of the type Axle Journal and Burnishing lathe. During the year, the plant also commenced manufacture of bed plates to fulfil the export order received by the HEC for 26 bed plates from Czechoslovakia. Apart from these, manufacture of screw jacks and certain selected items of road rollers had also been taken up.

Maintaining pace with the current import substitution drive in India's industrial field, HEC paid considerable attention to the aspects of import substitution and technological self-reliance. HEC's Foundery Forg Plant (FFP) made use of most of the indigenous raw materials during the year for castings and forgings excepting a few items, such as, nickel, ferro-molybdenum and ferrovanadium which were imported. The plant, at its own, developed a technology to manufacture certain sophisticated items, such as, propeller shafts for ship-building industry, butterfly valves and other equipment for electrical plant for the first time in India. All these were being imported hitherto.

In the same year, the Heavy Machine Building Plant (HMBP) also developed indigenous technology for the manufacture of equipment, such as, DC brakes upto 600 mm dia. wheel pairs for rolling stock, rotary limit switches, gear couplings and lubrication fittings. The indigenous content of the items produced in the plant is over 65 per cent.

The Heavy Machine Tool Plant (HMTP) made extensive use of indigenous technology for the manufacture of components of various machine tools. The indigenous content of the items produced by the plant during the year has gone up from 50.4 per cent to 54.05 per cent.

In the ancillary units, the value of import substitution was estimated at Rs. 5.4 million during the year. However, in 1971-72 it was slightly more.

HEC's order book, both for the orders received at home level as also from overseas countries indicated larger turnover during 1972-73 as compared to the preceding two years. During the year, the Heavy Machine Building Plant (HMBP) booked orders worth Rs. 1328.80 million (92,580 tonnes) from home market as against worth Rs. 853 million (60,006 tonnes) in 1971-72 and Rs. 162 million (37,197 tonnes) in 1970-71. The Foundry Forge Plant (FFP) also improved its order position to Rs. 61 million (9,533 tonnes) from Rs. 59.60 million (10,168 tonnes) in 1971-72 and Rs. 55.10 million (13,411 tonnes) in 1970-71. The Heavy Machine Tool Plant (HMTP) also sharply improved its order position from only Rs. 8.5 million (27 numbers) in 1970-71 to Rs. 23 million (39 numbers) in 1971-72 to increase further to Rs. 45.20 million (69 numbers) in the following year (1972-73).

During 1972-73, the Heavy Machine Building Plant (HMBP) received orders from M/s. National

Coal Development Corporation (NCDC), Bhilai Steel Project, M/s. Somani Steel, M/s. Larsen and Toubro and M/s. Koppers India while the Foundry Forge Plant (FFP) secrured them from seven firms which included Bhilai Steel Project, M/s. Bharat Heavy Electricals Limited, Hydrabad and Hardwar, M/s. Mining and Allied Machinery Corporation, M/s. Rourkela Steel Project and M/s. Bokaro Steel Limited (BSL). The Heavy Machine Tool Plant (HMTP) obtained orders mainly from M/s. Bokaro Steel Limited, M/s. Tungabhadra Steel Product, M/s. Baltiboi and Company, South Eastern Railways, Diesel Locomotive Works, Varanasi and M/s. Rourkela Steel Project during the year.

During the first quarter of 1973-74 (April-June 1973), HMBP booked orders over Rs. 50 million mainly from M/s. Bokaro Steel Limited and Bhilai Steel Plant while FFP secured orders over Rs. 5 million from both the firms mentioned above. The HMTP also did not lag behind in the field. It also received orders worth nearly Rs. 1.50 million from M/s. Fertiliser Corporation of India (FCI), Rourkela Steel Plant and Director General of Supplies and Disposals.

Apart from procuring orders from the indigenous organisations, HEC also proved its might in bagging export orders from abroad during 1972-73. Besides the order secured from M/s. Ferromet, a Czech firm for cast iron bed plates at a value of Rs. 1.56 million, HEC also submitted quotations to a number of foreign firms for supply of equipment and services at a value of Rs. 210 million. Its negotiations pertaining the supply of cast iron segments for underground tube railway at Prague (Czechoslovakia) are in progress. It has also submitted a quotation to USSR for supply of container cranes.

M/s. Engineering Projects (India) Ltd., a subsidiary of HEC, was incorporated in 1970 with a view to take up business connected with the supply of equipment for steel plants, mines, fertiliser units and other industrial projects. It is entrusted with the task of entering into contracts for design, manufacture, inspection, supply, erection and commissioning of equipment on a turnkey basis. The firm, as on 31st March 1973, was implementing 17 turnkey projects of a total value of about Rs. 516 million. The implementation of these projects is spread over a period of 2 to 4 years. Of these, construction of silos for Food Corporation of India (FCI), Coal Handling Plant for Haryana Steel Electricity Board, Indoor Stadium for New Delhi Municipal Committee and Bailadilla Iron Ore Mines Project - Parts I and III are scheduled to be completed during 1973-74.

It has submitted 24 tenders, both in India and abroad of a total value of Rs. 1900 million. One of the major projects for which the Company submitted tender abroad, pertains to setting up a semi-integrated steel plant in Iraq. The cost of project is estimated at a value of Rs. 692 million.

At home level, the firm has been entrusted with the job of construction of coke oven projects in the existing as also in the future steel plants in public sector on a turnkey basis. It has already received an assignment of rebuilding of coke oven battery No. S-A at Durgapur Steel Plant at a value estimated at Rs. 60 million. The project is expected to be completed by the end of 1974.

OUTPUT PROGRESS IN MINING EQUIPMENT IN PUBLIC SECTOR

While the sector of mining and allied machinery constitutes an important example of the progress made by the Indian economy in the field of industrial machinery, the contribution of M/s. Mining and Allied Machinery Corporation Ltd (MAMC), Durgapur (West Bengal), a public sector enterprise, deserves mention in the manufacturing context of mining machinery.

MAMC has achieved notable progress in mining machinery production over the last few years. During 1972-73, its production reached an all time high at 15,456 tonnes as against 11,990 tonnes in 1971-72. Its production was only 5764 tonnes in 1969-70 and 7742 tonnes in 1970-71. In terms of value, the production during 1972-73 is estimated at Rs. 154 million. The break-up of MAMC's production during 1972-73 was : conveyors nearly 2473 tonnes; port equipment 3578 tonnes; steel plant equipment 2776 tonnes; coal cutters and loaders nearly 103 tonnes; mine winder 159.40 tonnes; mine pumps 27.40 tonnes; mine locomotives 66.20 tonnes; mine fans 41.70 tonnes; roof supports and non standard equipment 2101.40 tonnes; spare parts 212.90 tonnes and miscellaneous equipment 3917 tonnes. Of the total production during the year, the ancillary units and sub-contractors contributed 2720 tonnes, valued at Rs. 16.80 million.

The average gross production per month which was 1395 tonnes in 1971-72 also rose to 2019 tonnes during 1972-73. The average monthly productivity of MAMC plant went up from 46 per cent in 1971-72 to 55 per cent in the following year.

During 1972-73, the Corporation went in for diversification of its output range. This has enabled it to make fuller utilisation of available capacity. The diversified range of MAMC included bulk material handling equipment for ports, steel plants and fertiliser plants. These tailormade sophisticated items are being manufactured by the plant notwithstanding bottlenecks at production level.

MAMC has drawn up a detailed programme for production during 1973-74. The output target for the year has been set at 20,800 tonnes at a value of Rs. 199.40 million. Item-wise targets are: conveyors 6018 tonnes (Rs. 49.15 million); mining equipment 3420.44 tonnes (Rs. 47 million); port equipment 5430 tonnes (Rs. 65.80 million); steel plant equipment 318.90 tonnes (Rs. 3.88 million); fertiliser plants and allied equipment 237 tonnes (Rs. 2.37 million) and spares 525 tonnes (Rs. 10.30 million).

During the first eight months of 1973-74 (April-November 1973), the production was of the order of 10,920 tonnes estimated at Rs. 74.28 million. This was 23 per cent higher than the output during the corresponding period of the preceding year. Based on this achievement, the firm expects to achive the production target set for the year.

In the wake of nationalisation of coal mines in India, prospects of more orders for mining equipment have increased. With a view to cope up with the demand for the machinery in the coming years, standardisation according to specifications and the range and capacity of equipment was necessary. MAMC, therefore, standardised the specifications for a comprehensive range of items. This would help the Corporation to switch over to manufacture standard mining equipment in large batches and increase the productivity of the plant ultimately. The plant has already undertaken manufacture of quite a few items as per standard specifications which include haulages, pumps and booster fans.

At home level, MAMC, supplied equipment at a value of about Rs. 96.30 million (11,903 tonnes of machinery and equipment) to its customers during 1972-73 which included Bokaro Steel Plant (2569 tonnes), M/s National Coal Development Corporation (NCDC) and other mine projects (1324 tonnes) and Haldia Dock Project (2321 tonnes). Most of the equipment supplied to Bokaro Steel Plant were erected and commissioned. It has also supplied equipment to M/s. Hindustan Copper Limited and Khetri Copper Project. It is currently engaged in executing orders for Haldia Dock Project.

The firm had on hand orders to the tune of Rs. 450 million by the end of March 1973. The firm has been nominated by the Government of India as the Project Authority for execution of Coal Washery Projects in the country. It was also entrusted with the responsibility of executing the work of expansion of Jamadoba and West Bokaro Washeries of M/s. Tata Iron and Steel Company Limited (TISCO). It has already completed the work at Jamadoba. After commissioning, the plant has been handed over to TISCO. The work at Bokaro is expected to be completed during the current year.

MAMC has set up an Ancillary Industries Development Cell in 1971. The Cell has already located 35 units of small industries in Durgapur—Asansol region and 10 units in Calcutta to take up manufacture of certain types of equipment quicker and more economically. Currently, only simple types of structural fabrication, machining, iron and steel casting are being handled by these units. During 1972-73, about 2079 tonnes of components at a value of Rs. 14 million were turned out by these units. During 1973-74, about 5000 tonnes of components at a value of Rs. 25 million are expected to be procured from these units.

MAMC is instrumental further in locating suitable ancillary units at Visakhapatnam, Madras, Mormugao and Bombay mainly for manufacture of simple items of port equipment.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

MANUFACTURE OF ALUMINIUM ALLOY CONDUCTOR

National Metallurgical Laboratory (NML), Jamshedpur, has developed a process for the manufacture of an Aluminium Alloy (NML-PM 2 conductor). It possesses certain characteristics, such as, high electrical conductivity, copper-like ductility, improved corrosion resistance over the electric grade aluminium and indigenous availability of the equipment.

It is essentially a new material. Its entry into the market will be facilitated by technical advantages it possesses over the existing electric grade aluminium.

Copper is traditionally used in the underground telephone cables. Much of the copper used in India is imported. If it is replaced by aluminium which is indigenously available, imports of copper could be reduced.

The use of aluminium in telephone industry has not found acceptance because of the general lack of ductility in the wires made from electric grade aluminium. Superior ductility of the NML-PM 2 conductor material overcomes this difficulty and in fact offers a serious challenge to the use of copper in underground telephone cables.

Certain advantage, such as, greater productivity, better quality of the PVC insulator conductors and reduced power losses in transmission could be achieved if electric grade aluminium is substituted by the NML-PM 2 conductor.

The conductor could, therefore, be used in the production of motor and transformer windings, automobile and welding cables and for domestic wiring.

The NML process involves the melting of the aluminium metal and addition of requisite quantities of alloying metals. The hot metal is cast into ingots with rapid rates of cooling. The ingots are mechanically worked to reduce to wires of required size with a thermo-mechanical treatment.

Tonnage scale trials have successfully been completed in collaboration with the cable industry. The Posts and Telegraphs Department through their Telecommunication Research Centre, New Delhi, have carried out extensive tests and have given acceptability reports.

All the raw materials and the equipment required are available indigenously.

NEW PROCESS FOR VITAMIN C

National Chemical Laboratory (NCL), Poona, has successfully developed a new process for the manufacture of vitamin C which is mainly used in the pharmaceutical industry in the form of vitaminized preparations and injections.

The indigenous demand for the vitamin is increasing and it is estimated that about 600 tonnes per annum of vitamin C will be required by 1975-76.

The process developed by NCL is based on 'Reichstein Synthesis', modified further to improve the yield. Starting from dextrose monohydrate (D-glucose), the process involves the following steps : D-Glucose - D-sorbitol - Sorbose - Diacetone sorbose - Diacetone ketogulonic acid - Vitamin C.

The process after development on a pilot plant scale, has been released to M/s. Hindustan Antibiotics Ltd, (HAL), Pimpri, Poona, for exploitation. M/s. HAL have already completed the installation of a 125 TPA vitamin C plant and implementation of a step by step production programme is in progress.

DEVICES FOR MICROWAVE APPLICATIONS DEVELOPED

Rapid advances in magneto-ceramic technology in the past fifteen years have made a tremendous impact on the growth of electronic and electrical industries. A wide variety of civil defence applications from DC to infra-red range of frequencies have become possible by the development of a new class of ceramic materials called "Ferrites". Present-day microwave communication, radar and microwave systems employ a large number of ferrite devices of various types. A variety of devices have been developed by Defence Electronics Research Laboratory (DERL), Chandrayanagutta Lines, Hydrabad for microwave applications using indigenous materials.

Two such devices, viz. non-reciprocal commutating device (X-band three port waveguide circulator) and non-reciprocal two port isolating device (X-band waveguide isobend) are noteworthy for their wide applications on systems like traffic radar, portable radars, microwave test benches, microwave communication systems and appliances.

The device, namely, X-band three port waveguide circulator essentially comprises of a solid prism of microwave ferrite material at the centre of tri-junction of rectangular waveguides.

A magnetic field is applied across the ferrite prism by means of a pair of magnets. Under proper conditions, this junction behaves as a traffic circle for electromagnet waves. Any signal incident in port 1 is passed on with minimum transmission loss to port 2. Signal leakage to port 3 is negligible (of the order of 1 per cent at room temperature). The same is true in respect of other ports in the cyclic order.

DERL has also successfully developed another device, namely, X-band waveguide isobend. By modifying the above mentioned circulator, double action of isolation and change the direction of transmission can be realised. If port 3 is terminated in a matched load, microwave energy incident in port 1 is passed on to port 2 with minimum loss (90 per cent transmission efficiency) and a directional off-set. Any signal incident on port 2 is transmitted to port 3 wherein it is absorbed by the matched load.

These components operate in the frequency range of 8400 to 10,200 MHz with a minimum isolation of 20 db (less than 1 per cent leakage). Transmission losses amount to a maximum of 0.5 db (less than 10 per cent) and VSWR is not greater than 1.25 at all ports. The frequency range can be shifted upto a maximum of 12,000 MHz by minimum design changes, without affecting other performance characteristics. Additional features of the above design is their adaptability to other frequency regions and development of more complex ferrite devices using these components as basic building blocks.

Both these components are at par with foreign equipment as far as their performance characteristics are concerned.

The present demand of the devices has not yet been assessed. However, there would be a requirement for large quantities of waveguide circulators to be incorporated in traffic radars proposed to be manufactured by HAL, Hyderabad.

Chief Inspectorate of Electronics, Ministry of Defence, Bangalore have conducted environmental tests on circulators and terminations used in isolating devices. These devices satisfy JSS specifications in all respects. Test approved components have already been supplied to certain organisations viz. BARC, Bombay; HAL, Hyderabad; CIL, Bangalore; IIT, Kharagpur; Saha Institute of Technology, Calcutta and their performances are reported to have been satisfactory.

Main raw materials required for these components are microwave ferrites, ceramic/metallic magnets, aluminium alloy, R.F. absorbing material, screws' adhesives and teflon. All these are indigenously available except R.F. absorbing material, which has to be imported from USA and France. Precision workshop facilities, including milling, shaping and lathe work and grinding of ceramics are required. High accuracies of the order ± 0.002″ in the dimensions of various parts of the devices and accurate fitting and inspection are essential. Signal source, general waveguide test bench set-up, power meter and VSWR meters will be required for testing purposes.

RESEARCH TO MEET FUEL AND FERTILIZER SHORTAGE

In the context of energy crisis and shortages of domestic fuel and fertilizer, Indian Agricultural Research Institute (IARI) has come to play an important role. The Gobar Gas Plant developed by the Institute is an innovation which, if properly exploited and extended, would go a long way in meeting the domestic fuel needs of India's rural population. The Institute is currently attempting to decrease the cost and increase the efficiency of these plants. The plants can even use cowdung as well as human night soil for methane generation, which can even provide domestic fuel at the urban level.

The Institute is thinking of giving another dimension and direction to this problem - that of growing algae, like Spirulina and some others, in ponds under natural sunlight and using the algae in fermentation wells for generation of methane just like cowdung or human night soil is used in gobar gas plants. The residual material is reasonably rich in protein and can be gainfully used as cattle feed. IARI have already made a beginning in this direction and hopes that this technology will, in due course, add to India's energy sources.

With fertilizers becoming a scarce commodity, nationwide research would have to be conducted for evolving new schedules for fertilizer application depending on agro-climatic conditions and nature of crops grown. The results obtained from the research so far indicate that considerable economy and greater efficiency in fertilizer use could be achieved by basing fertilizers' recommendations on soil tests.

In rice, the research has shown that the use of oil cakes, like neem and karanj, mixed with chemical fertilizers, results in the inhibition of the nitrification process and leads to substantial economy in fertilizer use.

Similarly, some work done on rice under the all-India Coordinated Rice Improvement Project has shown that omitting the basil dose of fertilizers (thereby making use of inherent soil fertility in the early stages of plant growth), accompanied by closer spacing of the seedlings and application of chemical fertilizers a certain number of days before flowering, leads to significant increase in fertilizer efficiency and reduction in fertilizer requirement.

Shortage of fertilizers will make it imperative to make greater use of organic manures in supplementing fertilizer doses. In the context of fertilizer shortage, a greater use of rhizobia and other micro-organism including the nitrogen-fixing blue-green algae, as bacterial and algal fertilizers has also been suggested.

Research carried out at IARI and at the Central Rice Research Institute has shown that the application of certain blue-green algal cultures (e.g. Tolypothrix) can help in fixing atmospheric nitrogen to the extent of about 20 to 25 kg. per hectare. This technique could be exploited in rice-growing areas where hardly any fertilizer is used in rice culture.

Methods of cultural and biological control and efforts towards the breeding of crop varieties tolerant to pests and diseases would have to be dovetailed together in an effort to reduce the requirement of chemical pesticides.

Pests take a particularly severe toll in pulse crops and in the oil-yielding rapes and mustards. The Institute has developed insecticidal schedules, using systemic and other insecticides which have resulted in a marked improvement in saving these crops from the depredation of the pests and thereby increasing yields.

For instance, in mustard, treating the furrows at the time of sowing, with the granular insecticides disulfoton or phorate at the rate of 2 kg/ha afforded protection against the sphid (or plant luese) *Lipaphis erysimi* for almost 100 days and resulted in a 200 per cent increase in yield compared with the untreated crop, and gave a net profit of over Rs. 1,300 per hectare.

PRODUCTION TREND IN DRUGS AND PHARMACEUTICALS (1972-73)

Products	Unit	No. of units	Installed capacity	Production
I. Antibiotics				
Amphotericin	Kgs.	1	1000	397
Chloramphenicol and its esters	Tonnes	4	97.70	57.50
Penicillin	MMU	4	334.00	200.15
Streptomycin	Tonnes	4	247.00	176.30
Tetracycline and its derivatives	,,	5	101.00	84.70
II. Antidiabetics				
Chlorpropamide	Tonnes	3	16.00	10.70
Insulin	MU	1	1500	898.20
Tolbutamide	Tonnes	5	78.00	57.65
III. Anaesthetics				
Procaine	Tonnes	2	104.50	42.75
Xylocaine	,,	2	7.00	4.30
IV. Antimalarials				
Amodiaquin	Tonnes	2	36.60	9.90
Chloroquin	,,	2	16.00	13.00
V. Sulpha Drugs				
Sulphacetamide/Sodium	Tonnes	4	The combined installed capacity is of the order of 2004 tonnes for all these items including for other sulpha drugs.	9.90
Sulphadiazine	,,	3		78.55
Sulphadimidine	,,	4		360.00
Sulphaguanidine	,,	1		265.95
Sulphamoxole	,,	1		38.00
Sulphanilamide	,,	1		78.80
Sulphaphenazole	,,	2		51.30
Sulphaphyridine	,,	1		11.30
Sulphasomidine	,,	2		83.50
Sulphathiazole	,,	2		316.55
VI. Vitamins				
Nicotinic Acid	Tonnes	8	255.25	15.00
Nicotinamide	,,			59.15
Vitamin 'A'	MMU	2	66.60	48.30
Vitamin 'B' 1	Tonnes	1	30.00	27.57
Vitamin 'B' 2	,,	1	5.00	1.23
Vitamin 'B' 12 (Cyanocobalamin)	Kgs.	4	257.20	133.00
Vitamin 'B' 12 (Hydroxocobalamin)	Kgs.	3		3.17
Vitamin 'C'	Tonnes	1	240.00	217.57
Vitamin 'D-2'	Kgs.	1	1000.00	67.12
Vitamin 'D-3'	,,	1		8.86

Source : Annual Report of the Ministry of Petroleum and Chemicals for 1973–74.

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ILSEEDS PRODUCTION

A REVIEW

India's production of five major oil seeds, namely, groundnut, rapeseed and mustard, sesamumseed, linseed and castorseed has been estimated at 6.7 million tonnes during 1972-73 as compared to 8.75 million tonnes in the preceding year, according to the Ministry of Agriculture, Government of India. The production of groundnut-in-shell, during 1972-73 amounted to 3.9 million tonnes while that of rapeseed and mustard was 1.86 million tonnes, of sesamumseed 3.5 million tonnes, linseed 4.4 million tonnes and mustardseed 1.4 million tonnes.

Apart from these major varieties of oilseeds, the production of cottonseed amounted to 1.98 million tonnes while that of safflowerseed was 79,000 tonnes and nigerseed, 95,000 tonnes (1972-73). Coconut production was of the order of 6088 million nuts in 1971-72.

Under the current export policy of oilseeds, vegetable oils and oilcakes, exports of groundnuts, mustard/rapeseed, kardiseed, nigerseed, seasmumseed as well as rapeseed oil/mustard oil are not allowed. Exports of non-essential oilseeds, namely, castorseed, copra, cottonseed and linseed are also not normally allowed but in exceptional cases. So is the case of raw rice bran and groundnut oilcake (expeller variety). Export of H.P.S. groundnut kernal and H.P.S. groundnut-in-shell have been decontrolled. A ceiling of 600,000 tonnes was imposed on the exports of de-oiled groundnut cake extractions during the year 1973. The ceiling was subsequently raised to 700,000 tonnes.

Exports of castor oil are canalised through the State Trading Corporation effective from September 1971. The export of de-oiled rice bran is canalised through the Solvent Extractors' Association of India, Bombay (since November 1971). Exports of coconut oil, cottonseed oil and groundnut oil are allowed on merits.

There is no export duty applicable now to oil seeds and vegetable oils excepting on de-oiled groundnut, oilcakes and de-oiled groundnut meal (solvent extracted variety containing less than one per cent oil) at the rate of Rs. 125 per tonne.

Exports of oilseeds amounted to Rs. 67.95 million (29,420 tonnes) during 1972-73 as compared to Rs. 62.9 million (29,170 tonnes) in 1971-72. The major contribution to the oil seed exports came from the groundnut H.P.S. kernels (Rs. 48.4 million in 1972-73 and Rs. 53 million in 1971-72).

The vegetabls oils group secured foreign exchange worth Rs. 244 million during 1972-73 (70,000 tonnes) as compared to only Rs. 71.6 million (24,000 tonnes) in 1971-72. The improved export trend continues in 1973-74 and in the first seven months (April-October 1973), the vegetable oil exports amounted to Rs. 196 million (25,000 tonnes). In this period, castor oil exports totalled 21,870 tonnes at a value of Rs. 190 million. In 1972-73, exports of this oil were 45,700 tonnes valued at Rs. 226 million. The export trade in oilcakes rose to Rs. 748 million (one million tonnes) in 1972-73 as compared to Rs. 401 million (741,000 tonnes) in 1971-72. In the first seven months of 1973-74 (April-October 1973), the oilcake exports have witnessed a sizeable rise to secure Rs. 1022 million (718,520 tonnes), which clearly indicates the increase in unit value realisation. Of the Rs. 1022 million export market for oilcakes during April-October 1973, the contribution of solvent extracted groundnut oilcake was as much as Rs. 703 million (433,710 tonnes) while that of solvent extracted cottonseed oilcakes totalled Rs. 188 million (159,410 tonnes) and solvent extracted linseed oilcakes Rs. 71 million (58,350 tonnes). The major factor in the sizeable rise in the export earnings of oilcakes during 1973-74 as compared to the preceding years was the substantial improvement in the offtake of groundnut oilcakes as well as other oilcakes, namely, cottonseed oilcakes and linseed oilcakes.

As against the export position described above, imports of oilseeds, vegetable oils and cakes were mainly in respect of mustardseed (Rs. 82 million) in 1972-73, soyabean oil (Rs. 146 million), goat fat (Rs. 70 million), mutton tallow (Rs. 18.5 million), copra (Rs. 7 million) and palm oil (Rs. 3 million). In the period April-October 1973, the import bill was worth Rs. 50.85 million as compared to Rs. 70.6 million in 1972-73 and Rs. 178.3 million in 1971-72. ☐

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RUBBER HARDNESS TESTERS FOR EXPORT

Till recently, Indian industry had to depend solely on imports of material testing machines to meet its domestic requirements. Today, it is in a position to offer them for export at international standards.

The contribution of M/s. Blue Steel Engineers Private Limited (144, A-Z Industrial Estate, Ferguson Road, Bombay) in this context deserves mention. The firm has not only succeeded in developing a variety of material testing machines, but has also been exporting them to developed markets of Europe like the Federal Republic of Germany, Netherlands, Belgium, Denmark, Luxembourg, Sweden, Finland, Norway, as also to Iran, Turkey and Bangladesh.

Recently, the company has secured a sizeable order from Brazil. They have also received further orders from West Germany and the U.K.

The production range of the firm includes metal hardness testers, rubber hardness testers, cement-concrete hardness and compression strength testers, sheet metal deep drawing (Erichsen) testers, whirling psychrometers and other industrial laboratory instruments. This firm is claimed to be the sole manufacturer in India of the inexpensive portable type of all categories in rubber hardness testers—shore A, shore C and shore D. Indeed, these products were considered to be too sophisticated to be developed in an emerging economy like India. These products manufactured in the country now have an accuracy comparable to international standards. They are also in keen demand from the very supplying countries from whom the Indian industry imported earlier.

The quality competence of the exports effected by the firm would become evident from some of the communications received from the importing community abroad, particularly in Europe. A firm in Netherlands has pointed out that inspite of international competition for the products under reference in their market, "the execution and quality of your testers is absolutely better". This firm has even requested the Bombay supplier to give them sole-representation for Holland. Another importer of the Federal Republic of Germany has stated that "we are pleasantly surprised at the exact determination of the measurements shown by this tester". Equally, revealing are the encouraging remarks by some of the domestic users of the Bombay firm's hardness testers. A noted rubber and cable firm in Bombay has felt that the Rubber Shore Hardness Tester supplied to them was found "quite equivalent to those imported".

From the modest beginning made by the firm in 1964 with the development of a rubber hardness tester (Shore-A Principle), M/s. Blue Steel Engineers Private Ltd. have not only diversified their manufacturing range but also increased its turnover capacity several-fold. Notably, this small scale firm exports a sizeable chunk of its present turnover to sophisticated markets abroad.

The firm has been participating in several trade fairs abroad, such as, in Hanover, Poznan and Zagreb. They are looking forward for participation in the Toronto Exhibition in 1975.

Apart from the fact that the products of the firm are internationally competitive in terms of quality, their price-competitiveness constitutes another significant factor which has facilitated its export growth. Since the calibration of the instruments produced by the firm, on which depends the accuracy of the products, is labour intensive, their price-competitiveness becomes obvious vis-a-vis the production undertaken in the developed markets of Europe.

SUGAR DIFFUSER TO MALAYSIA

Testifying to the competence of Indian industry to meet sugar mill demand in markets abroad, M/s. Larsen and Toubro Ltd. (L & T House, Ballard Estate, Bombay), have lately completed shipment of a 2,600 tonnes a day capacity sugar diffuser with accessories, to Malaysia. The shipment has been effected well within the target date of delivery.

Reported to be the first ever to be supplied abroad from India, the diffuser has been shipped in fulfilment of an order secured earlier by the Bombay firm from the State Development Corporation of Negri Sembilan, Malaysia. It is intended for a modern cane sugar factory at Ayeer Hitam, near Seramban, being set up by the Malaysia Corporation in collaboration with yet another Indian firm, M/s. Phaltan Sugar Works Ltd., Bombay. The order was secured by India in the face of stiff international competition. The Bombay firm is supplying and installing the diffuser on a turnkey basis.

Site erection of the diffuser by the firm's engineers and welders is ahead of schedule and the factory at Ayeer Hitam is expected to go on production stream by August this year.

The successful execution of the order by the Bombay Company may mean a significant breakthrough for Indian technical capability in the areas of

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design, fabrication and erection. It can also be expected to build up a favourable image for Indian industry in Malaysia and neighbouring countries, leading not only to export of sugar mill machinery but also process plant and equipment for other industries as well. This is particularly so considering that both Indonesia and Thailand, adjoining Malaysia, are planning to modernise their sugar industry.

The export earning of India's sugar mill industry amounted to about Rs. 12 mlllion in 1972-73 as against Rs. 11 million in 1971-72. The earning has reached this appreciable mark from a level of Rs. 0.50 million in 1965-66 and Rs. 1 million in 1960-61. Uganda, Malaysia, Federal Republic of Germany, Nigeria, Liberia and Ghana are the leading buyers for the machinery.

The sugar mill machinery industry in India is capable of manufacturing complete sugar plants of 1250/2000 tonnes per day and even higher cane crushing capacity. Some of the units are in a position to manufacture sugarcane diffusion plants. The licensed/registered capacity of the industry is of the order of 20 complete plants per year while for individual items of sugar mill machinery, in terms of value, it is Rs. 75 million. The current effective installed capacity for the manufacture of sugar machinery including complete plants is estimated at Rs. 250 million.

The production during 1973 is estimated at Rs. 200 million as compared to Rs. 180 million in 1972. In 1972, the capacity utilisation of the industry was of the order of 78 per cent. It is rapidly marching towards progressive indigenisation. The present import content in the industry is roughly 10 per cent, consisting mainly of bought-out items, such as, hydraulics, ball and roller bearings and centrifugal screens.

GLASS AND GLASSWARE IN EXPORT TRADE

Alongside production, the Indian glass and glassware industry has made appreciable strides in the export field as well in recent years. From Rs. 13.20 million in 1969-70, the exports of the industry improved to Rs. 27.90 million in 1973-74. In the first nine months of 1972-73 (April-December 1973), the export earning was Rs. 25.32 million (including Rs. 10.58 million for glass and Rs. 14.74 million for glassware) as against Rs. 20.22 million in the corresponding period of 1972-73.

The exports in the glassware category encompass a wide range including constituted bottles and phials, glass inners for vacuum flasks, glass tableware and other articles, laboratory glassware, glass tubes, microscope slides, glass bangles, beads, imitation pearls, imitation precious and semi-precious stones, fancy or decorative glass smallware and other articles of glass. Bangladesh, USSR, Nepal, Iran, USA, Afghanistan, Arab Republic of Egypt, Malaysia, Iraq, Singapore and Indonesia are among the important buyers.

Contributing to the uptrend in exports of glass and glassware from India, M/s. Alembic Glass Industries Ltd., Baroda, have succeeded in stepping up exports of their glass products from merely Rs. 0.30 million in 1972 to about Rs. 2.20 million in 1973. Total sales of the Company during the two years amounted to Rs. 66.10 million and Rs. 69.30 million.

Besides catering to household requirements, the products of the Company are in demand for use as glass containers by various units engaged in production of pharmaceuticals, beverages, cosmetics and preserved foods.

The production of glass and glassware in India improved to 300,000 tonnes valued at Rs. 500 million during 1972-73 from 290,00 tonnes at Rs. 400 million in 1971-72. There are 50 glass manufacturing units engaged in the production of a variety of glass and glassware with a combined installed capacity of 462,500 tonnes. Itemwise, the production during 1973 and 1972 was : bottles and vials (inclusive of semi-automatic) 180,000 tonnes and 178,600 tonnes; vacuum flasks 5.5 million pieces against 5.3 million pieces and laboratory glassware 2081 tonnes against 1840 tonnes. Sheet glass output at 19 million square metres in 1973 was more or less the same as in the preceding year. Glass shell output, however, declined to 150 million pieces from a level of 176 million pieces in 1972.

UPTREND IN EXPORT OF MEDICINAL AND PHARMACEUTICAL PRODUCTS

The exports of medicinal and pharmaceutical products from India rose to Rs. 103.20 million in 1972-73 as compared to Rs. 96.25 million in 1971-72. During the period April-December, 1973 (first nine months of 1973-74), these exports were valued at Rs. 91.80 million against Rs. 69 million in the corresponding period of the preceding year.

In tune with this uptrend, the Pharmaceutical Division of M/s. Bayer India Ltd. (82, Veer Nariman Road, Bombay-20) has more than doubled its exports to Rs. 1.71 million in 1973 from Rs. 0.75 million in the preceding year. These exports, including formulations as well as basic drugs, were directed mainly to Thailand, Sri Lanka, Singapore and Turkey. Additionally, the firm also succeeded in effecting rubber chemical exports, though these were limited only to the 1972 level of Rs. 113,000.

Besides pharmaceuticals and rubber chemicals, the Bombay firm is also engaged in manufacture of pesticides.

Pharmaceutical industry is the largest among the chemical based industries in India. It occupies a significant position in terms of technology developed, technical skills employed and the range and sophistication attained in product development. The production of the medicinal and pharmaceutical products has today risen to Rs. 3000 million from barely Rs. 100 million in 1947. With increasing production, the range of manufacture has considerably diversified to include a number of antibiotics, anti-TB drugs, anti-diabetics, sulpha drugs, anaesthetics, anti-malarials, anti-dysentery drugs, antipyretics, analgesics, vitamins, tranquilizers and antihistamines.

Side by side with the increase and diversification, import substitution has been an important feature of the industry in India. In 1971-72, while the total output of the industry was Rs. 3000 million, the element of imported raw material was estimated at Rs. 350 million.

INDIAN TELEPRINTERS FOR EXPORT

In keeping with India's progressive trend in production and export of teleprinters, M/s. Hindustan Teleprinters Ltd. (Guindy, Madras), a public sector unit in the line, have improved their export performance from year to year. Their overseas supplies and orders secured were valued at Rs. 1.42 million in 1972-73. Nepal, Singapore, Lebanon, Jordan, Belgium and Mauritius were among the major customers.

The total sale turnover of the Company during 1972-73 amounted to Rs. 42.20 million, registering an increase of 26 per cent over that of the preceding year at Rs. 33.52 million. Of the total sales in 1972-73, teleprinter machines alone accounted for Rs. 31.75 million as against Rs. 25.80 million in the preceding year. Quantumwise, 6165 teleprinters were sold against only 4836 units in 1971-72.

The Madras Company is manufacturing 31 types of teleprinter machines and attachments. Actual production of 6042 units of assembled machines in 1972-73 exceeded the target of 6000 units for the year and registered an increase of 26.4 per cent or 1263 units over the production in 1971-72. Value of spares and accessories in the same year was nearly Rs. 1 million compared to Rs. 0.77 million in 1971-72. The actual production of assembled machines (6042 units) in 1972-73 was comprised of 3123 units of English page models, 53 units of Devanagri page models, 933 units of Field version models, 602 units of English tape models, 53 units of Devanagri tape model, 207 printing reperforators and the rest in the form of attachments, ancillaries and other units.

Creditably, the import content in the Company's products, as at the end of 1972-73, was limited to only 5.7 per cent of cost of production—2.5 per cent in respect of components and 3.2 per cent in relation to raw materials. Imports were restricted to components like precision ball bearings, laminations, filter coil core, governor contacts, code punches and raw materials like special alloy steel, magnetic materials and special section not available indigenously. No new raw material or component was imported in 1972-73.

Conscious of the significance of research and development, the Madras firm has completed development work on a number of new items of equipment, such as, Arabic Printing Reperforator, Teleprinter Console TT. 5B, manual switching units and regenerative Repeaters. They are also progressing satisfactorily with other developmental jobs including new version of electro-mechanical teleprinter, electronic teleprinter and high speed tape punch (8 level) to be used as a computer peripheral.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT TRADE IN PROCESSED FOODS

Processed food exports from India totalled Rs. 192 million in 1972-73 as compared to Rs. 162 million in 1971-72, Rs. 155 million in 1970-71, Rs. 116 million in 1969-70 and Rs. 102 million in 1968-69, indicating a continuous improvement in the foreign exchange earning over the years.

During the first eleven months of 1973-74 (April, '73-February, '74), the exports fetched Rs. 158.8 million as compared to Rs. 160.4 million in the corresponding period of 1972-73.

In the period under reveiw during 1973-74, the principal categories of processed food items included guargum which fetched Rs. 50.6 million (32 per cent of the total earning), walnuts Rs. 20 million (12.6 per cent), pickles and chutneys Rs. 11 million (about 7 per cent), non-alcoholic beverages Rs. 10.7 million (6.7 per cent), instant coffee about Rs. 10 million (6.3 per cent), instant tea Rs. 8.4 million (5.3 per cent), juices, slices, jams (other than mango) and mango pulp Rs. 7.3 million (4.6 per cent), mango juice Rs. 6.9 million (4.3 per cent), canned and frozen meat and poultry products Rs. 6.9 million (4.3 per cent) and cocoa products Rs. 6.5 million (over 4 per cent). The other products included were biscuits, papads, starch and its derivatives, guar meal, canned vegetables, dehydrated onions, alcoholic beverages, baby food, malted milk food and Indian sweets.

Mango juice which fetched Rs. 8.7 million during April 1972—February 1973 accounted for nearly 11 per cent of the total exports but came down to the level mentioned above in the subsequent period mainly due to lesser exports to U.S.S.R. and Poland. Exports of frozen meat witnessed sizeable improvement in the comparable periods owing to increased offtake by the Gulf countries. Confectionary exports also recorded rise due to the export of chewing gum to Czecholsovakia.

An analysis of the processed food exports for the year 1972-73 would reveal that the East European block accounted for 23.5 per cent of these supplies, Western Europe 17.8 per cent, North America 16 per cent, ECAFE countries 15.9 per cent and EEC 11.3 per cent, according to the Processed Foods Export Promotion Council (R-15, NDSE II, New Delhi).

CASHEW KERNELS AND EXPORT TRADE

The importance of cashew kernels in India's export trade is improving year after year. While during 1972-73, the export value was of the order of Rs. 688 million for 66,278 tonnes, the exports during 1973-74 amounted to 52,233 tonnes valued at Rs. 746 million, according to the Cashew Export Promotion Council, Ernakulam (Kerala State). Quantitatively, the export during the year was less by 13,955 tonnes, but the foreign exchange earnings appreciated by Rs. 58 million. The increase in the earnings was due to the rise in the average unit value of export, which rose to Rs. 14.26 per kg. in 1973-74 from Rs. 10.38 per kg. in 1972-73.

Exports to all the major markets except Japan were lower during 1973-74. U.S.S.R. accounted for the highest quantity of 19,757 tonnes against 24,048 tonnes last year. The U.S.A. came next with an offtake of 18,407 tonnes against 21,985 tonnes. Japan, third in the list, imported 3,284 tonnes, representing an increase of 64.46 per cent over 1,998 tonnes bought by it in 1972-73. The other major markets in the order of imports were Canada, U.K., Australia, German Federal Republic, Netherlands, Hong Kong, Czechoslovakia and German Democratic Republic.

The imports of raw cashewnuts during 1973-74 were only 135,064 tonnes as against 197,938 tonnes in 1972-73, registering a fall of 31.77 per cent. The average unit prices of imports for 1972-73 and 1973-74 were Rs. 1607 and Rs. 1837 respectively.

Export of cashewnut shell liquid during 1973-74 amounted to 3,940 tonnes valued at Rs. 5.13 million compared to 4,962 tonnes valued at Rs. 5.68 million in 1972-73. The average unit prices of exports per tonne for 1972-73 and 1973-74 were Rs. 1146 and Rs. 1303 respectively.

India's production of raw cashewnuts improved to 200,000 tonnes in 1970-71 from 158,000 tonnes in 1963-64. The production target for 1973-74 was 236,000 tonnes, according to the Directorate of Economics and Statistics, Ministry of Agriculture.

INDIA INTERNATIONAL TRADE FAIR

The Ministry of Commerce, Government of India, will be organising the India International Trade Fair, 1974 (INDFAIR) in New Delhi from November 14 to December 13, 1974. The fair is being conceived essentially as a trade event with considerable scope for international and domestic business.

The month-long fair will be the first in the series of regular fairs planned to be held annually in 'Pragati Maidan' (New Delhi), 40 acres of which were built into a Permanent Complex for the Asia 72. The Fair Complex is the largest in the heart of India's capital with all services and facilities laid down to International specifications.

INDFAIR has already attracted substantial participation, both at Government level and from foreign companies. Invitations have been issued to all the countries of the world with whom India has diplomatic relations. Countries who have so far expressed their willingness to participate in the event include Australia, Afghanistan, Algeria, Belgium, Bulgaria, Denmark, German Democratic Republic, Federal Republic of Germany, France, Hungary, Italy, Iraq, Luxembourg, Netherlands, Poland, Rumania, Sweden, South Korea, Syria, USSR, UK, USA and Yugoslavia.

An important feature of the international sector in the Fair will be an African Pavilion, being specially built by the Fair Authorities for all the countries from that continent. The international sector is expected to occupy bigger space than in ASIA 72.

Foreign participants will be allowed to sell at the close of the Fair (on payment of the requisite customs duty) such of the exhibits as are otherwise permissible for import into India under the Import Trade Control Policy in force, provided the buyer holds a valid import licence for the goods in question suitably endorsed by the licensing authorities.

'Fair Quota' will be granted to each foreign participant in the Fair. The quantum of the quota will be Rs. 2,500 per sq. metre of space booked subject to a maximum of Rs. 2.5 million for each country participating in the Fair at National level and Rs. 750 per sq. metre of space booked subject to a maximum of Rs. 0.75 million for each foreign commercial firm participating in the Fair.

Disposal of exhibits against the Fair Quota will be subject to the conditions that (a) the items should be permissible for import into India under the Import Policy in force, (b) these should be sold to eligible buyers and (c) sales equivalent to a value of over US $ 50,000 should be through the State Trading Corporation of India. Disposal under the Fair Quota will be in addition to the sales against valid import licence already held by buyers in India. Application for issue of fresh import licences against the Fair Quota will be made by eligible buyers either through the Directors of Pavilions or through the Diplomatic Mission concerned in India to the Fair Authorities who will scrutinise the same and certify their entitlements to the Chief Controller of Imports and Exports, New Delhi, for issue of licences. For the purpose of valuation of import licence, import duty would be excluded and only the C.I.F. value of the items would be taken into account.

National sector's participation will cover Central Ministries (some in joint pavilions), State Governments and Union Territories, Public and Private Undertakings and Export Promotion Councils and Commodity Boards. The constituents of Engineering Export Promotion Council will be represented separately in two of the six large halls of the Permanent Complex.

It may be recalled that the third Asian International Trade Fair (ASIA 72) which was held in New Delhi for 45 days ending December 17, 1972 marked a stepforward in the context of Asian economic cooperation in particular, and international trade promotion in general. The Fair had an additional significance for India as it coincided with its twenty-fifth anniversary of independence. Organised under the auspices of the Economic Commission for Asia and Far East, the Fair facilitated the signing of a large number of high value contracts besides spot commercial transactions. The total value of export deals concluded by India with the participated countries was estimated at Rs. 275 - Rs. 300 million. The orders received were from a wide range of participating countries including the USSR, Czechoslovakia, Poland, West Indies and Canada. Besides, a large number of trade enquiries were received, the value of which ran into several million of rupees. Above all, the Fair provided an opportunity to India to represent, in a microscopic form, the technological advance achieved in industry, agriculture, trade and commerce, science and technology.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

OIL EXPLORATION IN INDIA

Viewed against the background of unprecedented recent oil crisis, presently being experienced by India as elsewhere, the discovery of oil at a depth of 962 metres at the Bombay High has raised India's hopes of meeting a considerable portion of its requirements from domestic source. The Oil and Natural Gas Commission (ONGC) had commenced offshore drilling on Sagar Samrat—India's first mobile offshore drilling platform - at Bombay High during 1973. The exact result of drilling on tangible basis would, however, be known after drilling six to seven wells in the area around the present site and exhaustive tests. The drilling itself is projected to reach a depth of 2000 metres. It is estimated that India has a recoverable reservoir of 4 billion tonnes of oil and 2 trillion cubic metres of gas.

India's demand of petroleum products is growing year after year because of its rapid process of industrialisation, modernisation of agriculture and growing needs of defence. Consequently, consumption of petroleum products in the country which was hardly around 2.5 million tonnes in 1947, has registered a near ten-fold increase to reach 24 million tonnes during the preceding two and half decades. The annual growth rate of petroleum consumption is presently about 9 per cent as against the world annual growth rate of slightly over 8 per cent. The major sectors of Indian economy, such as, industry, agriculture, plantation and road transport registered sizeable increase in petroleum consumption over the years. The shifting over from the coal engines to dieselisation accounts for nearly 52 per cent increase in consumption. In the area of fishing, the increase in consumption was significant owing to mechanisation of fishing boats and trawlers. The power generation sector also consumes over 25 per cent of furnace oil output. Similarly consumption of kerosene too has gone up sizeably because of its utility as a fuel.

In the wake of unprecedented rise in the price of oil, emanating from the major oil producing area—Gulf countries, most of the countries depending heavily on imported oil experienced a severe jolt following declaration to raise oil prices. India's import bill on account of rise in prices of oil and finished products totalled Rs. 3414 million during 1973. Maintaining the annual growth rate of 9 per cent in consumption and requirement at 1973 level, the imports for 1974-75 have been estimated at as much as Rs. 13,000 million, which account for about two-thirds of India's export earning. India is, therefore, striving hard to develop alternative sources of energy.

During 1973, domestic production of crude was of the order of 7.20 million tonnes while the imports of crude and products totalled 13.39 million tonnes. The domestic crude production hardly accounts for about one-third of the country's total requirements. Oil and Natural Gas Commission (ONGC) and M/s. Oil India Limited (OIL), the units in public sector and joint sector respectively, are engaged in oil exploration in India. Of the total crude production, ONGC accounts for about 4 million tonnes while the share of M/s. OIL is around 3 million tonnes. Both these oil exploring firms have, so far, discovered about 175 million tonnes of recoverable oil reserves and achieved cumulative production of about 60 million tonnes. The balance of 115 million tonnes is yet to be recovered. By the end of the Fifth Plan (1974-79), ONGC is expected to step up its production from the present 4 million tonnes to 8.42 million tonnes, taking the total production of ONGC and M/s. OIL both at a level of 11.42 million tonnes per annum. Besides this, during the plan period, nearly 70 million tonnes of additional recoverable reserves would be located.

The refining sector of the industry comprises 9 refineries in operation which processed 20.52 million tonnes of crude during 1973. Of the total quantity processed, 5 refineries in the public sector accounted for nearly 11.50 million tonnes while the share of four refineries in the private sector was little over 9 million tonnes. At the beginning of the Fourth Plan, the refining capacity of 8 refineries was of the order of 16.25 million tonnes.

During the terminal year of the Fourth Plan, one more refinery - Madras Refinery - went on stream and the Cochin Refinery was expanded. Consequently, the capacity increased to 24 million tonnes, inclusive of the spare capacity of refineries in the private sector. With the Haldia Refinery (installed capacity 2.5 million tonnes) which is expected to go on stream by mid-1974, the total capacity is expected to be 26.5 million tonnes.

During the Fifth Five-Year Plan, refinery expansion programme Includes a 1 million tonne refinery at Bongaigaon (Assam), expansion of Koyali refinery by 3 million tonnes and Mathura Refinery with a capacity of 6 million tonnes. Including this additional capacity of 10 million tonnes during the Fifth Plan, the total capacity per year would increase to 36.5 million tonnes.

In the field of lube oil, at the beginning of the Fourth Plan, the production of Digboi refinery and Barauni refinery was 69,000 tonnes. The production, however, went up to 470,000 tonnes in 1973-74 when two more lube plants, namely, Lube India Limited and MRL went on stream during the plan period. The consumption of lubes and greases was around 601,000 tonnes. Thus, there was a wide gap betwean the production and the demand. This gap is expected to reduce sizeably when the Halda Refinery plant goes on stream by the end of 1974. In the Fifth Plan, lube base stock demand is expected to increase. To meet this situation, the debottlenecking and expansion of the capacity of M/s. Lube India is envisaged.

With a view to reduce domestic consumption of crude oil and other petroleum products and to minimise the import bill on this account, Indian Government increased the prices of these products in November 1973. The increase in prices was more substantial in respect of motor spirit. As a result, consumption of motor spirit registered a considerable fall ranging from 15 per cent to 23 per cent over the preceding year instead of an anticipated growth of 5 per cent. Similarly, consumption of kerosene oil was checked by rising the price in November 1973. This has also helped in preventing its adulteration with high speed diesel oil by bringing the price of both the products almost at par with each other. For reducing the consumption of lubricating oils, three measures, (i) fiscal means (ii) reclamation of used lubricating oils and iii) marketing of higher quality lubricating oils which would reduce the total consumption by increasing the period of change of lubes (drain period) were envisaged.

NEW PRODUCT RANGES IN ELECTRONICS

Despite its late appearance on the industrial map of India, electronic industry has witnessed progress in production, product diversification, import substitution and exports. In this context, M/s. Electronics Corporation of India, Hyderabad, Andhra Pradesh, constitutes an important example.

Maintaining its trend to manufacture new products ECIL introduced a number of new electronic items in the market during 1972-73. A recent line of production, Television, was taken up by the Corporation and was introduced into the market during the year. Its TV set is an all solid state model, incorporating the principle of modular construction.

On the systems side, Mossbauer spectrometer, low background beta counting system and ronograph were the new products introduced during the year while on instruments side, halogen quenched metal wall G.M. counter for Gamma Monitor, Dual trace vertical amplifier for 50 MHz solid state oscilloscope, pulse generator for 10 MHz frequency counter with the basic unit and plug-ins with capacity upto 120 MHz, time mark generator upto 50 MHz, magnetic susceptibility and hysteresis apparatus and medical instruments, such as, cardiac pace maker, phono-cardioscope and cardiac monitor were the new products introduced by the ECIL. Besides these, nickel cadmium cells and synchros (under production) and two axis gyro assemblies for M/s. Bharat Electronics Limited were also developed on the components side.

Apart from the above, some new product lines, such as, solid state annunciators, solid state industrial time delay relays and intrinsically safe relays have also been introduced during the year. Several other instruments and components are on various stages of development and will be put into production in the following year.

The Corporation's overall production during 1972-73 was of the order of Rs. 65.75 million as compared to Rs. 36.40 million in the preceding year. Of this, the divisionwise production during 1972-73 and 1971-72 was : Nuclear and Allied Instrument Division Rs. 17.90 million against Rs. 14.52 million; Resistors and Capacitors Division Rs. 5.90 million (components) against Rs. 3.72 million; Semi Conductors Division Rs. 5.41 million against Rs. 4.73 million; Power Reactor Instrumentation Division Rs. 6.87 million against Rs. 4.83 million; Servo Controls Division Rs. 3 million against nearly Rs. 1 million; Computer Division Rs. 11.72 million against Rs. 6.62 million; Microwave Division Rs. 1.63 million against Rs. 0.36 million and Antenna Systems Division Rs. 0.77 million against Rs. 0.63 million. Television Division and Special Products Division and Antenna Systems Division commenced commercial operations during 1972-73 only, manufactured worth Rs. 5.92 million and Rs. 0.50 million and Rs. 6 million respectively.

ECIL received recently orders of a sizeable value which included orders from Defence for supply of special electronic products and for antennae, an order for 97 feet diameter antenna for Satellite Communication for the overseas communication service and orders for the TV sets for Satellite Communication. Besides these, some orders for regular items of production are also on hand. The total value of these orders was Rs. 74.30 million (as on March 31, 1973).

Research and Development activities are being paid consistent attention by ECIL with a view to keep pace with the recent trends in production in the line as also for product development, import substitution and diversification.

Electronics industry in India witnessed consistent rise in production over the years. During 1973-74, the output was estimated at Rs. 2420 million as compared to Rs. 2060 million in 1972-73 and Rs. 1800 million in the preceding year. Of the total production value in 1973-74, consumer electronics and mass communication products accounted for Rs. 640 million as against Rs. 650 million (1972-73); telecommunication equipment Rs. 630 million against Rs. 490 million; aerospace and defence equipment Rs. 350 million against Rs. 300 million; computer control and instruments Rs. 250 million against Rs. 180 million and components Rs. 550 million against Rs. 440 million. During the Fifth Five-Year Plan (1974-79), an investment of Rs. 2016 million has been proposed, of which Rs. 1342 million would be allocated in public sector and Rs. 674 million in the private sector.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

STRAIN GAUGE TRANSDUCERS FOR MULTIPLE APPLICATIONS

The National Physical Laboratory (NPL), New Delhi, has successfully developed semiconductor strain gauges. These are more sensitive, by a factor of 100, than the older resistance wire strain gauges. Using the new gauges, various transducers for measuring non-electrical parameters for industrial, medical, engineering, scientific and other applications have been developed.

The transducers developed by NPL are highly sensitive, inexpensive and light in weight. All the parts have been fabricated using indigenous materials. The cost of the indigenous transducer is about one-tenth of that of the imported unit.

Industrial transducers have been made for the measurement of high and low pressures, column heights, immersion depths, large and small flow rates of all types of fluids, small and big weights and small displacements and for level determination.

Pressure transducers : Different types of pressure transducers (diaphragm type, cantilever type and diaphragm cantilever type) have been developed which are used for the measurement of pressures of gases, liquids and slurries, i.e. any medium that acts as a fluid. The medium may be inert or corrosive, clear or with suspended solids, hot or cold, viscous or free-flowing. Its pressure, whether static or fluctuating, can be measured, both instantaneously and continuously.

Pressure transducers can be used equally well in laboratory, factory and field, in fixed locations as well as for airborne use and in vehicles.

Immersion transducers : The different types of transducers developed using strain gauges can be used for the measurement of column heights or depths and pressures of liquids. The transducer as a whole is immersed in the liquid whose pressure or height is to be measured.

The immersion transducers are useful for measuring depths of depressions, as those of lakes and wells, and in chemical and other industries. These are equally useful for determining ocean depths.

Flow transducers : These are used for the measurement of flow rates of all types of fluids including chemicals which can flow freely in tubes or pipes, and are equally useful for the measurement of low as well as high flow rates of fluids.

In the hitherto known transducers, the whole of the liquid whose flow rate is to be measured, is passed through the flow transducer, but when the flow rate is very high, such as, in a water supply pipe of a city, it may not be possible to pass the flow through the small transducers. Also in some cases, the impediment offered by the transducers to the flow might seriously affect the very flow rate desired to be measured. To overcome these difficulties, a large rate flow transducer has been developed.

Level transducers : Strain gauge transducers have also been developed for liquid level determination. These are very useful in opaque vessels. Another advantage is that the transducer does not come in contact with the liquid in the pipe.

Load transducers and applications : Various load transducers/cells using strain gauges have been designed and developed for monitoring and measuring small and big weights. These transducers are capable of measuring even milligram weights,

The load cells are useful for various types of weighings like those of truck, railway coach and aeroplane. The load cells can be put to diverse applications as in obtaining vehicle actuated system, burglar alarm (without the use of optical beam which is necessary in the case of photoelectric cells), automatic registration of train on the platform, blowing up of mines, helmet testing and calibration of compression machine. The feasibility of these new applications has already been tested.

Further applications of load cells are in weighing and force measurement in textile testing, process control, testing machines, alarm systems, jet and rocket thrust measurement, besides hundreds of other services virtually in every field of science and industry. Aerospace applications include jet engine test stands, rocket engine testing equipment and reactionary torque devices. In materials research, test set-ups utilizing the load cells permit measurement of the tensile strength of delicate fibres.

Load cells are also useful in physiological investigations, such as, in determining minute changes of weight of small organs.

Displacement transducers : A new type of displacement transducer has been developed for the measurement of very small displacements from 0.002 mm upwards. These have a host of applications in various fields. In the medical field, these transducers have been used to measure rhythmic movement of external body parts with respiration. Muscle movements can also be measured.

Biomedical transducers : NPL has designed and developed various strain gauge type biomedical transducers. These find application in the fields of medicine, physiology, neurophysiology, surgery, biophysics, biochemistry, and aeromedical and other medical diagnostics.

The following types of biomedical transducers have been made.

Blood and other physiological pressure transducers : These are used for the measurement of intra-arterial and intra-venous blood pressures. Other physiological pressures like cerebrospinal fluid (csf) pressure can also be measured.

Breathing rate/pulse rate transducers : These transducers are used for the measurement of pulse rate, respiratory rate or volume.

Medical drip transducers : Drip transducers are used for recording the total volume or number of drops or drip rate of blood, glucose or any other required liquid (e g. medicine) being transfused into the patients or experimental animals. The main advantage of the transducer is that the required data can be telemetered easily.

Blood flow transducers : The flow rate of physiological liquids like blood is measured using these transducers.

Transducers for engineering and scientific application : A number of engineering and scientific investigations have also been realised. Some of the practical applications obtained are as follows :

The transducer technique is useful for the measurement of high voltages of high source impedances. By this technique, an ac/dc transfer standard can be achieved. The dimensional changes of quartz crystals on the application of electric fields have been measured. The technique also enables the quality of raw uncut quartz crystals to be tested before making crystal resonators from them.

The dimensional changes produced under the application of magnetic and electric fields in ferromagnetic and ferro-electric materials have been determined. The technique enables better acoustic transducers to be developed.

An improved temperature compensation technique has been developed. This technique is useful for a single gauge, for two gauges of unequal resistances and different makes, and also for an apparently matched gauge pair.

ASYMMETRIC PRESSURE PROBE DESIGNED

The National Aeronautical Laboratory (NAL), Bangalore, has designed two models of an asymmetric pressure probe, namely, model NAL-CCP-1 and model NAL-PLP-1 for simultaneous measurement of pressure, flow speed and direction of two-dimensional and axisymmetric flows with or without separation, flow measurements in turbomachines, diffusers and nozzles. These are particularly suitable for flows having large velocity gradient and varying flow direction.

The probe consists of three parallel tubes in an asymmetric configuration. Model CCP has a cranked cantilever mechanism, while model PLP has a parallelogram linkage mechanism. Although the models are designed for operation in aligned mode (where the tube axes are in the flow direction), these can also be used in a non-aligned mode (where the tube axes are in a fixed, known direction), when space or time limitations make it necessary.

The models have certain specifications viz. Fluids : gases and liquids which do not corrode stainless steel and brass; Flow speed range : upto 250 m/s for air at STP with linear calibration; Resolution 0.2 m/s (at 100 m/s velocity with manometer resolution of 1 mm, or at 10 m/s with a manometer resolution of 0.1 mm) and Flow angle range : —180° to + 180° (CCP-1), — 60° to + 60° (PLT-1).

BUILDING OF BRICKS FROM ALUMINA RED MUD

The Central Building Research Institute (CBRI), Roorkee, has successfully carried out extensive trials on the production of building bricks from washed alumina red mud, incorporating readily available siliceous materials.

Alumina red mud or bauxite reject is an important inorganic waste material available in large quantities from aluminium-producing plants. It consists of alumina (18-30 per cent), titania (18-27 per cent), iron oxide (22-31 per cent) as well as small quantities of silica, calcium oxide and alkali. The present accumulation of this wate material in the country's five principal aluminum-producing plants is about 0.6 million tonnes, and with the proposed expansion, a serious disposal problem is bound to arise.

The CBRI process is similar to that of producing normal clay bricks. The bricks have a pleasing pale brown, orange or golden yellow colour, which enhances their value as facing bricks. Their compressive strength varies from 150 to 250 kg/cm^2 and water absorption from 15 to 20 per cent.

FACTS ON INDIAN ECONOMY

India is the seventh largest country in the world with an area of 3.27 million sq. km (USSR 22.40 million sq. km; Canada 9.98 million sq. km; China 956 million sq. km; USA 936 million sq. km; Brazil 8.57 million sq. km and Australia 7.69 million sq. km). It has the world's second largest population (563 million), next only to China (800 million). Its population is more than that of North and South Americas combined (330 million and 200 million), far more than that of the entire African continent (360 million) and that of entire Europe exclusive of USSR (520 million).

In terms of Gross National Product, India enjoys ninth position (1971) at $ 50 billion, next to USA ($ 1046 billion), USSR ($ 366 billion), Japan ($ 230 billion), Federal Republic of Germany ($ 220 billion), France ($ 150 billion), UK ($ 135 billion), Italy ($ 101 billion) and Canada ($ 93 billion).

Since Independence, Indian economy has been witnessing a significant transformation. Over this period, its national income has doubled, industrial output trebled and metal production quadrupled. Its electric power generation rose ten-fold and output of industrial machinery fifteen-fold. Steel, cement, fertilisers, chemicals, pharmaceuticals, oil-refining, textiles ship-building, electronics and nuclear energy are but a few examples in which the economy has registered visible progress. Near self-sufficiency has been achieved in railway and road transport as also in communication equipment.

Besides building basic intra-structure, imbibing modern technology and diversifying industrial and export sectors, India has ushered in green revolution. It has the second largest irrigated area in the world (27.5 million hectares), next to China (76 million hectares). The irrigated areas in the two leading economies of the world, namely, USA and USSR, are merely 15 million hectares and 11 million hectares respectively, notwithstanding their larger sizes.

India is the second largest rice producer of the world. Its output was 44 million tonnes (1971) while that of China was about 75 million tonnes. Its wheat production is the fourth largest - 23.25 million tonnes against 98.70 million tonnes of USSR, 44.62 million tonnes of USA and 32 million tonnes of China (1971).

Bovine population is the world's largest in India (177 million cattle), followed by Brazil (97 million), China (63 million), Argentina (50 million) and Australia (24 million). Its sheep-stock is the world's fourth at 43 million, preceded by Australia (178 million), China (71 million) and Agentina (44 million). In terms of wool production, India's position is twelfth.

With 433 million kg, India is not only the largest producer of tea in the world but also the leading exporter (over 36 per cent). The commodity occupies the second best position after jute-manufactures in India's export trade and accounts for about 8 per cent of the country's total exports (Rs. 1473 million out of Rs. 19,600 million in 1972-73).

India holds an important place in the global textile economy. It is the world's third largest producer of cotton lint (1.2 million tonnes) against 2.3 million tonnes in U.S.A. and 1.5 million tonnes in China (1971). It is also the fourth largest producer of cotton yarn at 881,000 tonnes (1971), preceded by U.S.A. (1.58 million tonnes), China (1.5 million tonnes) and U.S.S.R. (1.49 million tonnes). In terms of cotton fabrics output, India occupies pride of place at 7355 million sq. metres (1971) compared to 6935 million sq. metres in U.S.S.R., 5620 million sq. metres in U.S.A., 6000 million sq. metres in China and 2500 million sq. metres in Japan. Among the world's exporters of cotton textiles too, India has been in the forefront, generally as the third best. In 1972-73, its cotton lint output was 12.6 million bales while that of cotton yarn was 972 million kg. and cotton cloth (mill-made) 8055 million metres. The export earning of raw cotton and cotton textiles was Rs. 250 million and Rs. 1750 million respectively in 1972-73. In textile machinery sector also India has made a mark having attained self-sufficiency in many areas of manufacture. The country has exported to nearly 50 destinations having earned Rs. 43 million in 1972-73. Textile knowhow is also being supplied by India to co-developing countries; already there are joint ventures with Indian collaboration in operation or under implementation in countries like Afghanistan, Indonesia and U.S.A.

In tobacco cultivation, India is the third biggest country in the world (350,000 tonnes in 1971) coming next to China (785,000 tonnes) and U.S.A. (775,000 tonnes). Indian tobacco and manufactures are exported to more than 50 countries in the world and earned Rs. 450 million in 1972-73. In cigarette manufacture, India's position at 66 billion numbers (1971) is tenth, next to U.S.A. (585 billion numbers), U.S.S.R. (334 billion), Japan (232 billion), West Germany (137 billion), U.K. (112 billion), Poland (77 billion), Brazil (76 billion), France (75 billion) and Italy (67 billion).

India is the home of spices. It is the world's leading producer and exporter of black pepper, cardamom, turmeric, ginger and chillies. Its shares in global production is about 40 per cent in black pepper, over 60 per cent in cardamom, 80 per cent in turmeric, 50 per cent in ginger and 60 per cent in chillies. The average of its spices production is estimated at 800,000 tonnes every year. Its spices were exported to the tune of nearly Rs. 300 million in 1972-73.

The second best raw jute grower (1.7 billion lbs), next to Bangladesh (2.6 billion lbs), India enjoys monopoly in the production and export of jute goods which constitute the prime foreign exchange earner for the country (Rs. 2500 million in 1972-73).

The world's fifth position is occupied by India in sugar manufacture (4 million tonnes in 1971), next to U.S.S.R. (8.4 million tonnes), Cuba (6 million tonnes). Brazil (5.3 million tonnes) and U.S.A. (5.28 million tonnes). In 1973–74, India's sugar production is estimated at 4.3 million tonnes while its output of sugarcane in terms of gur or crude sugar) in the year is placed at 12.6 million tonnes. India's sugar exports amounted to Rs. 133 million in 1972-73.

India is the foremost exporter of cashew kernels in the world, having earned nearly Rs. 690 million in foreign exchange during 1972-73. It also accounts for over half of global coir production and a sizeable value of exports in the line (Rs. 145 million in 1972-73). It is the seventh among the major fish catching countries and its marine product exports amounted to Rs. 545 million in 1972-73.

India is the leading producer of groundnut (5.7 million tonnes), followed by China (2.7 million tonnes). It exported Rs. 54 million worth of groundnut kernels in 1971-72, with U.S.S.R. as the major customer. The country occupies the second largest place in castor beans production (144,000 tonnes in 1971), next to Brazil (265,000 tonnes). Its castor oil has witnessed upsurge in world demand and its exports nearly quadrupled from Rs. 62 million in 1971-72 to Rs. 225 million in the subsequent year, U.S.S.R., U.S.A., U.K. and Czechoslovakia being the foremost buyers. India is also a prominent exporter of oilcakes; its export value in 1972-73 was Rs 790 million against Rs. 440 million in the preceding year. Solvent extracted groundnut oilcake (Rs 585 million) is of particular significance in the country's export trade.

The Indian economy is rich in mineral resources. It has the largest deposits of iron ore in the world estimated at 21.5 billion tonnes. In the production of the ore, its position at 21.25 million tonnes (1971) is seventh next to that of U.S.S.R., (110.34 million tonnes), U.S.A., (49 million tonnes), Australia (36 million tonnes), Canada (27 million tonnes), China (24 million tonnes) and Sweden (22 million tonnes). In 1972-73, India produced 37 million tonnes and exported 21 million tonnes to fetch Rs. 1100 million. In manganese ore output India's place is fifth (0.7 million tonnes), next to U.S.S.R. (2.6 million tonnes), South Africa (1.4 million tonnes), Brazil (1.2 million tonnes) and Gabon (about 1 million tonnes).

In coal output, India occupies the world's seventh position (70 million tonnes in 1971), next to U.S.A. (503 million tonnes), U.S.S.R. (441 million tonnes), China (390 million tonnes), U.K , (147 million tonnes), Poland (145 million tonnes) and Federal Republic of Germany (111 million tonnes). India's coal output in 1973-74 is estimated at 80 million tonnes.

In terms of pig iron output, India occupies the world's 13th position at 6.74 million tonnes (1971), preceded by U.S.S.R., (89.3 million tonnes), U.S A. (75.70 million tonnes), Japan (74.5 million tonnes), West Germany (30.2 million tonnes), China (27 million tonnes), France (18.7 million tonnes), U K. (15.4 million tonnes), Belgium (10.4 million tonnes), Italy (8.7 million tonnes), Czechoslovakia (8.1 million tonnes), Canada (8 million tonnes) and Poland (7.3 million tonnes).

India's position in crude steel production is fifteenth at 6.2 million tonnes preceded by U.S.S.R., (12.6 million tonnes), U.S.A. (109.3 million tonnes), Japan (88.6 million tonnes), West Germany (40.3 million tonnes), U.K. (24.2 million tonnes), France (22.9 million tonnes), Italy (17.5 million tonnes), Poland (12.7 million tonnes), Belgium (12.5 million tonnes), Czechoslovakia (12.1 million tonnes), Canada (11.1 million tonnes), Spain (7.8 million tonnes), Australia (6.8 million tonnes) and Rumania (6.8 million tonnes).

India has also emerged as a noted exporter of iron and steel products in recent years, particularly of iron and steel bars and rods, tubes and pipes, rails and railway track material. In 1972-73, the iron and steel products contributed Rs. 418 million to the country's external trade.

India occupies the ninth position in the world's cement output at 14.9 million tonnes preceded by USSR (100 million tonnes), USA (71 million tonnes), Japan (60 million tonnes), West Germany (41 million tonnes), Italy (32 million tonnes), France (28 million tonnes), UK (18 million tonnes) and Spain (17 million tonnes). In 1972-73, India's cement output was of the order of 15.5 million tonnes.

In the area of electricity generation, India is world's thirteenth at 62 billion kwh preceded by USA, (1710 billion kwh), U.S.S.R. (800 billion kwh), Japan (386 billion kwh), UK (256 b. kwh), West Germany (254 b. kwh), Canada (217 b. kwh), France (149 b. kwh), Italy (125 b. kwh), Poland (70 b. kwh), GDR (69 b. kwh), Sweden (67 b. kwh) and Norway (68 b. kwh).

India's engineering industry presents a typical example of dynamic growth and diversification. The industry's organised sector annually manufactures nearly $ 3 billion worth of products ranging from pins to locomotives and ball bearings and billet mills. Besides meeting the ever increasing domestic requirements, the industry has an export capability of nearly $ 200 million worth of products every year of which one-third is accounted for by goods of developmental nature. The industry's contribution to the export sector has been revealing consistently improving trends - Rs. 105 million in 1960-61, Rs. 300 million in 1965-66 and over Rs. 1500 million in 1972-73. The progress accomplished by the industry in automobile and parts, railways, electric power generation and distribution, machine tools, bicycles, radio receivers and industrial machinery is particularly noteworthy. Besides expanding physical exports year after year, the industry has come to be reckoned with as a competent supplier of know-how for undertaking turnkey projects and consultancy services overseas.

The automobile sector has emerged as the prime engineering product export earner (Rs. 170 million in

1972-73). The range of production includes trucks and buses, jeeps, station wagons, tractor trailers and special purpose vehicles. Indian assistance is being sought by way of joint industrial collaboration to set up automobile units in quite a few co-developing countries.

Next to USSR, India has the world's largest railway network in the world. Besides earning reputation as a reliable exporter of railway wagons, coaches and track material, Indian railways have also secured and executed several export contracts by open global competition from countries like South Korea, Thailand, Arab Republic of Egypt, Sudan, Hungary, Iraq, Yugoslavia and Poland.

In the field of electric power generation and distribution, the Indian industry has made a notable mark in recent years. It has already proved its capability in installing transmission line towers in countries like Nigeria, Sudan, Kuwait, Burma, Thailand and even U S.A. The industry's export capability in power equipment includes designing, engineering, fabrication, testing and erection of complete high tension power transmission lines. Next to automobiles, the industry's electric wires and cables, occupy second best position in India's engineering exports (Rs. 125 million in 1972-73). Also the export performance of electric motors, switchgears and transformers, electric fans, and parts, radio and components, electronics, electric accessories and appliances, air-conditioners and refrigerators has been sizeable in recent years.

India's place in global production of radio receivers is the sixth at 2 billion numbers preceded by Japan (28 billion numbers), U.S A. (14 billion numbers), U.S.S.R. (9 billion numbers), West Germany (5.4 billion numbers) and France (2.8 billion numbers).

Among other engineering industries in which the Indian economy has registered progress comparable with the leading producers in the world are machine tools (11th position), bicycles (5th position) and electric fans, diesel engines as also industrial machinery, such as, textile machinery and sugar mill machinery.

Interestingly, India has succeeded in supplying its know-how through joint-ventures in several of these engineering industries. While the co-developing countries are already convinced of India's export capability in these lines, the sophisticated economies are gradually realising the comparative cost advantage in depending on Indian supplies rather than producing by themselves.

The success stories of India's winning global contracts of high value bear testimony to the industrial revolution already achieved in many sector of production of the econony. Indian transmission line towers are now seen installed in USA, Sudan, Iran, and Kuwait. Power cables and conductors supplied by India are already carrying energy in Malaysia, Thailand and Kuwait. India's railway wagons are now active in carrying men and goods in South-East Asian, East European and East African countries. Its industrial machinery, particularly, textile machinery, food processing machinery, tea machinery, jute, cement and sugar manufacturing machinery are considered as one of the world's best. Indian firms are poised for undertaking a variety of turnkey projects especially in the engineering sector and for supply of consultancy services. A recent example is the notable contribution made by the Indian industry to Iran's power transmission programme. Similarly, expansion of the growing railway network of Iran is being assisted by India. An Indian firm of consultants has been appointed in Syria for selection of the best quotation for cement plants in Syria and supervision of their erection and installation. Such examples are in sizeable number. In the field of the joint ventures, Indian manufacturers have proved their merit not only in the countries of Asia, Africa and South America but even among the developed countries like Canada, Ireland and France for manufacture of light and heavy engineering products, chemicals, textile machinery and so on.

Even in the chemical sector, India's comparative position in global production is noteworthy. In the output of sulphuric acid which is the base of chemical industry, India's position is twelfth in the world. Again in terms of hydrochloric acid, India is the seventh leading producer in the world. In caustic soda, its position is ninth, next only to U.S A., Japan, U.S.S.R., West Germany, France, Italy, Canada and Sweden. Its position in soda ash production is the world's eighth. As a manufacturer of salt which is also the

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basic raw material in the chemical industry, India is the fifth largest in the world.

Apart from transformation it has witnessed in the engineering and chemical industries, India's economy is also competent to manufacture and supply drugs and pharmaceuticals, plastics, art silk fabrics, leather manufactures, glass, paper, and so on. Interestingly, India is the second largest producer in the world of feature films, next to Japan.

Even in the fields of highly sophisticated technologies in atomic energy and space exploration, India has made notable advance. The Atomic Energy Commission of India conducted on 18th May 1974 a nuclear explosion experiment using an implosion device at a depth of about 100 metres. The experiment was a part of the programme of study of peaceful use of nuclear explosions without causing any contamination of atmosphere. Thus, India became the sixth country in the world after USA, USSR, UK, France and China and first among the developing countries to have mastered the technology of nuclear explosions.

In space technology, India has already sent over 600 rockets in the space for conducting scientific and technological studies. Development work in construction of Indian Scientific Satellite weighing about 300 kg. and to be launched towards the end of 1974, has been completed. □

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EXTERNAL TRADE IN TRAVEL GOODS

Indian hand bags and other travel accessories are emerging as a promising area of export growth among non-traditional export products. The value of such exports increased nearly three-fold to Rs. 23 million during 1972-73 from only Rs. 8.65 million in the preceding year.

During the first three quarters of 1973-74 (April-December 1973), these exports amounted to Rs. 24 million against Rs. 18 million in the corresponding period of 1972-73. Of this, hand bags and wallets (excluding artware leather) fetched Rs. 18.45 million. USA, Japan, Canada, Australia, Federal Republic of Germany and Hong Kong were the major buyers in order of the value of their intake. The export value of other travel goods of leather was Rs. 2 million. USA was the major customer for these goods. Among other categories in the group, vulcanised fibre hand bags (excluding artware) earned Rs. 1 million and other vulcanised rubber travel goods contributed Rs. 1.90 million. Vulcanised fibre hand bags were supplied mainly to Kuwait and UK while USSR, USA, UK, Netherlands, Federal Republic of Germany and Canada were the significant importing countries for travel goods of vulcanised rubber.

Contributing to the export effort in the line, M/s. Blow Plast Ltd. (Station Road, Bhandup, Bombay), manufacturer of VIP brand travel luggage and requisites, have recently concluded a sizeable contract valued at Stg. £ 100,000 with an overseas party from Saudi Arabia. A letter of credit for Stg. £ 70,000 has already been opened in favour of the firm. It has succeeded in supplying its wares to about 35 countries so far.

The firm made a modest beginning in the export field three years back when their exports amounted to only Rs. 1,06,700. Their performance in the field improved to about Rs. 748,000 in 1972-73 and to an appreciable level of Rs. 3.40 million in 1973-74. They are hopeful of achieving an export target of Rs. 6 million for the current year 1974-75. The products of the firm are claimed to compare favourably with world famous brands like Samsonite, Spartanite, President and National.

The installed manufacturing capacity of the Bombay firm is of the order of 1200 pieces of luggage per day while actual production is rated at 900 pieces per day. They plan to introduce new items, both for home and export markets.

CABLES AND WIRES ACTIVE IN EXPORT TRADE

Cables and wires constitute an important segment of India's export growth in the engineering industry. These products fetched Rs. 126 million through their export supplies during 1972-73.

Indian industry offers a variety of cables and wires for export to the world markets. Among these insulted cables and wires and power aluminium conductors (A.C.SR.) are eagerly sought in the overseas markets in large quantity. U.S.S.R., Iran, Sri Lanka, Qatar, Federal Republic of Germany, Arab Republic of Egypt, Sudan, Tanzania, Kuwait, Australia, Singapore, Hong Kong and Thailand are among the leading buyers.

M/s. Industrial Cables (India) Limited, Rajpura (Punjab) is one of the leading exporters of cables in India. Their export turnover was of the order of about Rs. 14.3 million during 1972-73. From a modest beginning in 1966-67, the company's graph of exports has witnessed a consistent uptrend to reach the current level. The firm is a recipient of a Certificate of Merit from the Government of India for its outstanding export performance for the year 1971-72.

The production of the company was valued at Rs. 52.30 million in 1972-73 as compared to Rs. 46 million in the preceding year. Having commissioned its steel wire unit in Haryana (District Jind) recently, the firm is poised for expansion of its existing units as well as diversification into new lines. The licensed capacity of its cable unit has been recently increased from 960 kilometres to 1920 kilometres of PILC cables, 800 kilometres to 1600 kilometres of PVC cables and 1750 tonnes to 6000 tonnes of ACC/ACSR conductors per year. It has also obtained an industrial licence for the manufacture of 600 tonnes of grooved contact wire (trolly wire).

Among the firm's principal customers abroad are M/s. Razno Imports of USSR and the Ministry of Electricity and Water of Kuwait.

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WOOD CARVINGS FOR EXPORT

While the export earning of woodwork including carvings was Rs. 38 million in the full year of 1972-73, even during the first nine months of 1973–74 (April-December '73), the export value was more at Rs. 41.83 million.

Of the total foreign exchange earing of Rs. 41.83 million in April-December 73, shisham wood carvings, supplied among others to USA, Japan, Australia, Canada, Czechoslovakia, Belgium, Federal Republic of Germany, Netherlands and UK, netted Rs. 14.48 million. Woodwork carvings of rose wood was the next best export item in the group. It fetched Rs. 11.18 million. Japan, Federal Republic of Germany, USA and Italy were the major buyers in order of the value of their intake. Woodwork inlaid with ivory was yet another significant export item in the group. It earned nearly Rs. 3.50 million, mainly again from USA, Japan and Federal Republic of Germany. The earning of walnut wood carvings was Rs. 1.27 million while sandal wood carvings contributed Rs. 1.16 million. The export value of other woodworks totalled Rs. 10.24 million. USA, Japan, Czechoslovakia, Panama Republic and Muscat were the major destinations.

In the context of these exports, the performance of M/s. Surisons (Basti Nau, Jullundur) has been appreciable. Founded in 1970, the firm has stepped up its exports of wood carvings from Rs. 1.15 million in 1971 to Rs. 1.64 million in 1972 and Rs. 2 million in 1973. The firm is reported to have been recently awarded a Trophy by the Punjab Exports Promotion and Advisory Committee for export of its wood carvings to sophisticated markets including USA, Australia and Japan.

UPTREND IN EXPORTS OF ENGINEERING PRODUCTS

Exports of engineering products from India have witnessed a gradual uptrend in recent years. The export value rose to Rs. 1505 million in 1972-73 as compared to Rs. 1260.45 million in 1971-72. During the first eleven months of 1973-74, these exports totalled about Rs. 1490 million, according to the Engineering Export Promotion Council, Calcutta.

In tune with this uptrend, M/s. Guest Keen Williams Ltd. (Jeevan Deep, 1, Middleton Street, Calcutta), one of the manufacturers in the line, were able to earn over Rs. 5 million even in the first quarter of 1974, attaining half the level of their total exports during the preceding year.

The Calcutta firm has four operating divisions, each engaged in a wide range of engineering items. Its Sankey Precision Pressings Division is engaged in the manufacture of stampings for electrical trade, precision press work for automobile and textile industries, transformer strips and meter components. The products manufactured by the Steel Division include electrically melted alloy steels, rolled steel bars, sections, rods and bright steel bars. The third division, called the Fasteners Division turns out bolt and nuts, rivets and spikes, wood screws, machine screws, self–tapping screws, tinmen's rivets, cutter pins, screw and safety pins. Another division of the firm, the Engineering and Forgings Division is engaged in the manufacture of drop, upset and press forgings for railways, automobile and other industries. These divisions work through five manufacturing units, two each in Howrah (Calcutta) and Bhandup (Bombay) and one in Bangalore.

The Company has also formed a subsidiary, viz. G.K.W. (Overseas Trading) Ltd. with the primary object of promoting exports.

DOUBLE DECKER TO HONG KONG

Contributing to the growing popularity of India-made road motor vehicles, M/s. Ashok Leyland Ltd. (Ennore, Madras) have recently exported a 'Titan' double deck bus to Hong Kong. This, in fact, is reported to be the first ever fully built bus of its kind to be exported not only from India but any country in the Middle or Far East.

The 'Titan' chassis for the bus was manufactured at Ashok's factory at Madras whilst the double deck body was built by M/s. Sion Garage Ltd. of Bombay. The vehicle is powered by a six cylinder 11.1 litre diesel, also manufactured by the Madras firm. It is fitted with a semi-automatic gear box. The bus has already gone into service in Hong Kong and the general reaction is reported to be favourable.

The Madras firm is engaged in the manufacture of different brands of chassis for vehicles and automobile accessories as also diesel engines. Despite the production constraint, the firm attained record production during 1973-74. During the year, its production included 5639 'Comets', 33 'Beavers', 269 'Hippos', 168 'Titans' and 51 'Dumpers'.

Besides M/s. Ashok Leyland Ltd., one more Madras firm, M/s. Enfield India Ltd., in the automobile line, have done well in the export field in recent months. Their export earning improved to Rs. 3.80 million in 1973 from Rs. 2.80 million in the preceding year. Alongside progress in exports, the output of vehicles turned out by them also improved to 13,320 numbers in 1973 against 12,885 units in 1972. Similarly, the output of agro-industrial engines produced by the firm rose to 44,776 (1973) units from 40,220 units (1972), mainly due to larger off-take of sprayer engines.

Automobile industry constitutes a prominent sector of India's engineering industry. The foreign exchange earning of road motor vehicles and parts was of the order of nearly Rs. 160 million in 1972-73 as against Rs. 149 million in 1971-72.

During the first three quarters of 1973-74 (April-December 1973), the export earning of road motor vehicles and parts totalled Rs. 85.30 million. Of this, motor vehicle bodies, chassis, frames and accessories alone brought in nearly Rs. 52 million. Buses in assembled form or otherwise constituted the next best area of sizeable export earning. These fetched Rs. 11.85 million while lorries and trucks brought in Rs. 7.70 million. Besides these significant groups, the export value of other categories in the line was : passenger motor cars Rs. 1.85 million; special purpose lorries, trucks and vans Rs. 1.50 million; road tractor and tractor trailor combination Rs. 1.10 million and motor cycles, motorised cycles and parts Rs. 2 million.

During the last two decades, India's automobile industry has developed technical expertise and know-how to manufacture a variety of commercial vehicles catering to rapidly changing requirements of users at home and abroad. The broad range of manufactures, today, includes trucks, buses, lorries, motor cars, jeeps, scooters, tractors and almost a complete range of ancillaries and parts. Production of the industry is also rising year after year. The output of commercial vehicles rose to about 42,400 numbers in 1973 from 37,460 numbers in 1972 while production of jeeps improved to 13,070 numbers from 12,590 numbers. Similarly, the output of scooters, motor cycles and mopeds was up at 150,903 numbers in 1973 compared to 133,500 numbers in the preceding year.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT TARGETS FOR FIFTH PLAN

Based on a study of 121 major items of India's export trade and overseas supply of consultancy services, the economy's export targets for the Fifth Five-Year Plan (1974-79) have been estimated to rise to Rs. 44,700 million. The study was undertaken by the Indian Institute of Foreign Trade. The targetted rise in exports reflects an annual growth rate of 14.7 per cent over 1972-73, 17.4 per cent over 1973-74 (estimated at Rs. 20,000 million as per Fifth Plan) and 12.8 per cent over 1973-74 (likely estimate of Rs. 24,500 million).

One of the major conclusions of the study was that unit value effect has dominated in 1973-74 over 1972-73 to the extent of 86.7 per cent of the growth of export earnings. Owing, among other things, to price boom and oil crisis, the units value effect is expected to have been quite pronounced in 1973-74 over the preceding year in respect of certain items like engineering goods, chemicals, basic chemicals and allied products and plastic processed products which were not taken into account in the study as their quantity figures for 1973-74 were not available.

The study concluded that the targets proposed envisage 64.6 per cent of the increased export of Rs. 11,930 million in 1978-79 over 1972-73 to be effected by quantitative increases and 26.2 per cent by higher unit values, the effects of interaction being 9.2 per cent.

Another major conclusion was that engineering goods will command prime position by the end of the Fifth Plan, their exports rising to Rs. 5250 million by 1978-79 from Rs. 1830 million in 1973-74. Cotton Textiles (mill-made) are envisaged to take the second best place with their exports estimated at Rs. 4500 million by 1978-79 as compared to Rs. 2378.20 million (likely) in 1973-74. Jute manufactures are expected to occupy the third place with exports projected at Rs. 3545 million in 1978-79 as against Rs. 2228.30 million (likely) in 1973-74. The other major growth items are expected to be among others, iron ore, leather and leather manufactures, gems and jewellery, oil cakes and fish and fish preparations.

The study has further concluded that India's export trade in consultancy services might increase from an estimated Rs. 9 million (1973-74) to Rs. 260 million (1978-79), of which construction services would account for Rs. 200 million.

EXPORT REVIEW OF IRON AND STEEL PRODUCTS

India's export trade in iron and steel products secured Rs. 391 million in foreign exchange during the first three quarters of 1973-74 (April-December 1973) as compared to Rs. 298 million earned in the same period of 1972-73. In the full year of 1972-73, the export value stood at Rs. 417.4 million.

Exports of pig iron and sponge iron amounted to Rs. 174 million during April-December 1973-74 as against Rs. 125 million in the same period of 1972-73. There was also a sizeable improvement in the export of steel tubes and pipes which secured Rs 141 million as against Rs. 89 million in the comparable periods. Steel ingots and other primary forms in iron and steel were sold at Rs. 11 million against Rs. 5.6 million. Export of rails and railway track construction material of iron or steel fetched Rs. 23.7 million as compared to Rs 11.5 million. Likewise, the overseas supplies of universals, plates and sheets improved to Rs. 5 million against Rs 4.4 million. The only category whose exports have fallen down in the comparable periods were iron and steel bars and rods - Rs. 33.3 million as compared to Rs. 60 million.

Pig iron exports were directed to U.S.S.R. (Rs. 71 million), Japan (Rs. 60 million), Singapore (Rs. 12.8 million), Korea Republic (Rs. 27.8 million) and Bangladesh (Rs. 13.8 million). Ferro-manganese which secured Rs. 22 million was principally supplied to U S.A , Philippines, Singapore, Japan and Malaysia.

Export trade in bright bars secured Rs. 13.3 million in the period under review, the important buyers being Iran, Thailand, Indonesia, Saudi Arabia. U.S.A. and Iran were the other major buyers of bars and rods other than of high carbon alloy.

Galvanised tubes and pipes were exported to fetch nearly Rs. 90 million while non-galvanised secured Rs. 16.6 million. Saudi Arabi, U.K., U.S.A., Dubi, Iran, Iraq, Kuwait, Jordan and Qatar were the leading buyers of the galvanised tubes and pipes while Jordan, U.K., U.S.A. and Kuwait were the leading purchasers of non-galvanised tubes and pipes.

EXPORTS OF DOMESTIC ELECTRIC EQUIPMENT

A broad range of domestic electric equipment including domestic refrigerators, electric fans, heaters and electro-thermic domestic appliances have been active in India's export trade. They fetched foreign exchange worth Rs. 31 million during 1972-73 as against Rs. 15.4 million in 1971-72. In the first three quarters of 1973-74, the export value totalled Rs. 23 million against Rs. 21 million in the first three quarters of 1972-73.

Complete domestic refrigerators were mainly supplied to Poland (Rs. 2 million) and Kuwait (Rs. 0.2 million) and their export to Iraq was of the order of Rs. 2.5 million.

Ceiling fan exports amounted to Rs. 12.5 million and the major importers included Kuwait (Rs. 4 2 million), Iraq (Rs. 3.6 million) and Nigeria (Rs. 1.3 million). Among other importers were Australia, Bahrein Islands, Abu Dhabi, Dubai, Malaysia, Nigeria and South Yemen Peoples' Republic. Table fan exports secured Rs. 1.7 million mainly from Poland.

Other domestic electric equipment exported by India includes pedestal fans, rail carriage fans, electric and mechanical domestic appliances like coffee mill and food grinders, regulators and parts of electric fans, domestic room heaters and water heaters, stove/oven for cooking, smooth iron and hair dressing appliances and electro-thermic domestic appliances and parts.

ART WORKS FETCH FOREIGN EXCHANGE

Art works and antiques from India are in keen demand abroad. Their foreign exchange earning was of the order of Rs. 200 million during the first three quarters of 1973-74 (April-December). In the same period of 1972-73, these exports secured only Rs. 142 million. Even in the entire year of 1972-73, the value of exports was about Rs. 183 million.

The principal category exported in this group relates to artware of copper, brass and bronze. These artware pieces netted foreign exchange worth nearly Rs. 90 million during the period April-December 1973. The U.S. market imported the artware to the tune of Rs. 30 million. Next in importance were the U.K. (Rs. 6.5 million), Saudi Arabia (Rs. 6.4 million), Netherlands (Rs. 4.5 million), U.S.S.R. (Rs. 4.3 million), German Federal Republic (Rs. 8.3 million), Denmark (Rs. 3.6 million), Czechoslovakia (Rs. 2.8 million) and Poland (Rs. 2.2 million).

Another important category of export pertains to woodworks including carvings of rose wood, sandal wood, shesham wood and walnut wood as also works inlaid with ivory. In the period under review, woodworks including carvings of rose wood were exported to the tune of Rs. 11.2 million while those of shesham wood netted Rs. 14.5 million. The major importers were Japan and German Federal Republic for rose wood carvings; U.S.A. (Rs. 6.2 million), Japan and Australia for shesham wood and carvings and U.S.A. and Japan for woodwork inlaid with ivory.

Carpets as artware also constitute a significant item of export in the line. These fetched Rs. 11.4 million in foreign exchange in the period under review. U.S.A., German Federal Republic and U.K. were the major destinations. Numdahs as an artware netted an additional sum of Rs. 4 million, mainly from markets, such as, France, Japan and U.S.A.

U.S.A. and France were the main buyers of papier mache which was exported to the tune of Rs. 1.4 million in the period under review.

EXPORT OF OILCAKES TREBLED

India's export trade in oilcakes (feeding stuff for animals) has nearly trebled during the first three quarters of 1973-74 (April-December 1973) in comparison with the same period of the preceding year. The export value in these periods totalled Rs. 1266 million as against Rs. 440 million.

During the full financial year of 1972-73, the export value stood at Rs. 790 million.

The major growth point in the export trade related to solvent extracted groundnut oilcakes. This product fetched foreign exchange worth Rs. 818 (517,000 tonnes), the major importers being Japan (118,920 tonnes at Rs. 180 million), Italy (58,440 tonnes at over Rs. 100 million), U.K. (54,050 tonnes at Rs. 91 million), U.S.S.R. (44,110 tonnes at Rs. 66 million), Hungary (36,990 tonnes at Rs. 56 million), German Federal Republic (36,890 tonnes at Rs. 56 million), Netherlands (34,370 tonnes at Rs. 58.5 million) and Poland (34,580 tonnes at Rs. 54 million).

The next important category of export during the eriod under review was solvent extracted cottonseed ilcake (de-corticated) which fetched Rs. 208 million 172,200 tonnes). For this item, the principal importers vere Netherlands, U.K., Italy, Czechoslovakia, German emocratic Republic, German Federal Republic, Spain, ungary, Denmark and Poland.

Apart from the above major varieties, the range of ilcake exports from India include de-oiled rice bran vorth Rs. 33 million mainly to Singapore, German ederal Republic and Netherlands; solvent extracted nseed oilcake which fetched Rs. 64 million princi- ally from Japan and Netherlands; expeller oilcake f cottonseed (de-corticated) which secured Rs. 10 nillion mainly from U.K., solvent kardi oilcake which etted Rs. 12.4 million from Japan, and solvent extract- d sesamum oilcake which was exported to the tune f Rs. 10 million particularly to Japan and Poland.

Interestingly, the export of solvent extract ground- ut oilcake fetched Rs. 818 million even during the rst three quarters of 1973-74 as compared to Rs. 585 nillion in the entire year of 1972-73. The quantum xported in these two periods was 517,000 tonnes and 36,273 tonnes, clearly indicating the sizeable improve- ent in unit value per tonne. Similarly, the export of lvent extracted cottonseed oilcake (de-corticated) also evealed substantial improvement in the export trade. s export value was of the order of Rs. 112 million uring 1972-73 and Rs. 208 million in the first three uarters of 1973-74.

Alongside the progress registered by the oilcake xports, the group of oil seeds, oil nuts and oil kernels ave also witnessed export boost during the first three uarters of 1973-74 as compared to the same period in e preceding year. The export value in these periods talled Rs. 87.3 million and Rs. 33 million respectively.

OUSEHOLD EQUIPMENT OF BASE ETALS FOR EXPORT

A wide variety of household equipment made of se metals is supplied by India to the world markets. he range includes domestic utensils, oil pressure stoves and parts. The foreign exchange earning of all the varieties of household equipment made by base metals totalled Rs. 47 85 million during the first three quarters of 1973-74 (April-December 1973) as against Rs. 36 million of the same period of the preceding year.

Mainly supplied to countries like U.K., U.S.A., U.S.S.R. and Poland, E.P.N.S. ware secured foreign exchange worth Rs. 23.33 million during the period April-December 1973. In the same period, aluminium utensils fetched Rs. 6.2 million, sanitary fixtures of copper and alloy Rs. 2.3 million and stainless steel utensils Rs. 3.6 million. Poland was the major buyer of aluminium utensils while U.S.A., U.K , Singapore and Tanzania were the principal buyers of stainless steel utensils.

Apart from these categories of utensils, the Indian industury has sent abroad cast iron and other utensils of galvanised iron, galvanised iron buckets, ghamellas and copper utensils and pressure cookers of aluminium alloys also.

PLASTICS AND LINOLEUMS ON EXPORT FRONT

India's export trade in plastics and linoleums continues to show uptrend. In 1973-74, the export was of the order of Rs. 166 million as against Rs. 84 million and Rs. 63 million in the preceding years of 1972-73 and 1971-72 respectively.

Several plastic items have revealed improvement in the year 1973-74. In the plastics group, export trade in plastic imitation jewellery has more than trebled to the level of Rs. 16.2 million in 1973-74 as compared to Rs. 5.2 million in the preceding year. PVC rigid pipes and conduits and PVC foam products constituted another growth point at Rs. 5.6 million as against Rs. 1.9 million. Polyethylene film sheets and bags (including woven sacks) secured Rs. 10.1 million as against Rs. 5.2 million. Export performance of fountain pens and ball point pens also witnessed growth from Rs. 2.3 million to Rs. 7.7 million. Plastic moulded and extruded goods as well as PVC gramophone records and accessories secured Rs. 22.8 million as against Rs. 19.7 million.

Among other categories whose exports have recorded sizeable rise were GRP manufactures, plastic dental products, plastic electrical accessories, metallised plastic products, PVC sheets, laminates, hand bags and other PVC fabricated goods.

The group of linoleum has registered a marginal improvement from Rs. 14.3 million to Rs. 17.3 million. Plasticisers is a new item which brought in foreign exchange worth Rs. 2.8 million during 1973-74. High impact polystyrene exports were worth Rs. 3 million and negligible last year. Phenol formaldehyde moluding powder also earned Rs. 1 million as compared to negligible last year.

The increase in the export earnings of plastics and linoleum in the year 1973-74 would have been higher but for the shortfall in the performance of categories like spectacle frames, PVC leather cloth, polyethylene rigid and flexible pipes and polylined jute apart from linoleums and general purpose polystyrene.

Major importers of Indian plastics and linoleums include USSR, Hong Kong, Dubai, Czechoslovakia, Nigeria, UK, Singapore, German Democratic Republic, Kuwait and Sudan.

The Plastics and Linoleums Export Promotion Council, Bombay, had set a target of Rs. 120 million for the export trade during the year 1973-74 - which has nearly been achieved. The Council have now set an export target of Rs. 500 million to be achieved within the next five years to come.

INDIA'S TRADE WITH LATIN AMERICA

Trade between India and Latin America was till 1967-68 confined to a few items—mainly export of jute goods and shellac from India and occasional imports of wheat, rice, uncut diamonds and cotton from these countries. Three delegations from India were sponsored to visit Latin American countries, one by FICCI in 1969, the second by Projects and Equipment Corporation and some other public sector undertakings in 1972 and the third by the Engineering Export Promotion Council in 1973. Delegations from Colombia, Peru and Brazil visited India during this period.

With a view to provide a framework for expanding economic cooperation and trade with the countries in this region, India concluded trade agreements with Chile, Peru, Brazil and Colombia. These trade agreements in general provide for the most favoured nation treatment between the contracting parties and provide a good foundation for expansion of trade relations.

The following table indicates the relative importance of countries of this region in India's foreign trade.

Figures in million Rs.

	1971-72	1972-73	1972-73	1973-74
	(April to March)		(April to Dec.)	
Argentina				
Exports to	60.0	7.7	6.5	30.3
Imports from	1.3	179.7	1.1	385.0
Brazil				
Exports to	5.6	4.9	3.1	8.2
Imports from	16.4	12.1	9.1	93.4
Mexico				
Exports to	8.7	6.8	5.7	3.6
Imports from	15.3	8.0	4.5	15.6
Peru				
Exports to	9.1	4.6	3.9	3.1
Imports from	17.4	31.2	30.4	0 3
Total for the region including the above countries				
Exports to	125.8	42.6	35.8	61.1
Imports from	57.4	231.8	45.9	470.5

Argentina

India's main export items to this country are jute goods which account for about Rs. 27 million out of Rs. 30.3 million, the value of total exports during April-December 1973. The other important items are dyeing and tanning substances, ice and crude opium. India's imports from this country are mainly wheat, tanning substances and calculating machines.

Argentina has embarked upon a three year Plan for rapid industrialisation in various fields, such as, renovation of railways, atomic energy, mining, iron and steel etc. which offer good opportunities for mutual collaboration between Argentina and India. India and Argentina have already signed a bilateral agreement for cooperation in the field of atomic energy under which India will collaborate with Argentina in setting up an Atomic Power Project.

Brazil

The major item of India's exports to Brazil is shellac which accounts for more than 52 per cent of exports at Rs. 8.2 million in April-December 1973. The other items are medicinal products and machinery. Important items of imports are uncut diamonds, carnauba wax and essential oils. The Projects and Equipment Corporation of India has made a study of four projects to be set up in Brazil, namely, manufacture of overhead cranes, manufacture of heavy plates and vessels, cashew shell oil plant and a foundry. Detailed negotiations for implementation of these projects are likely to start shortly.

Mexico

Here again jute goods account for more than 75 per cent of India's exports of Rs. 3.6 million in April-December 1973. Other items of exports are shellac and medicinal products. Notable items of imports are chemicals and lead. There seems to be some prospects for cooperation between the two countries on supply of railway equipment from India.

Peru

India's exports to Peru are at present mainly jute goods and rubber tyres and tubes for automobiles. Imports have so far been generally confined to raw cotton. India had entered into a long term contract for supply of 54,000 tonnes of copper and 7,200 tonnes of lead. The Projects and Equipment Corporation of India has already completed preliminary studies for the setting up of certain engineering projects in Peru, such as, manufacture of bicycles, heavy electricals, heavy engineering, black pipes, ceramic insulation and ball bearings. Proposals for collaboration in some mining projects are also under study.

India's other important trade partners in the region are Chile, Panama, Colombia, Haite, Dominican Republic, Bolivia, Uruguay and Venezuela.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

DRY AND STORAGE BATTERY INDUSTRY

India's dry and storage battery industry has come of age. Dry and storage batteries have multiple uses in today's industrial activity. While dry batteries are primarily used in flash lights, radios, telecommunication equipment and signalling equipment storage batteries find their application in automobile vehicles, train lighting, air-conditioning, telephone exchanges, wireless equipment, mechanical handling equipment and emergency power generation. India-manufactured storage batteries are mainly of the lead acid type.

In the organised sector, there are 11 units engaged in the manufacture of dry battery cells while an equal number of units are producing storage batteries. During 1973, the installed capacity of the units producing dry battery cells was of the order of 1144 million numbers while that of the storage battery units was 1.40 million numbers. During the year, the production of dry battery cells was estimated at 720 million numbers and that of storage batteries was 1.20 million numbers. The production of dry battery cells was 314.45 million numbers in 1967, 445.45 million numbers in 1968, 476.65 million numbers in 1969, 492 million numbers in 1970 and 580 million numbers in 1971. The output of storage batteries which was hardly 0.76 million numbers in 1967, rose to 0.87 million numbers in 1968 but during the span of the next four years - 1969-72, it ranged between 1 to 1.18 million numbers. The industry is today poised to undertake manufacture of batteries for submarines too.

The dry battery cell industry which is included in the Priority Sector, is open for licensing on merits and foreign collaboration too is considered likewise. Industrial policy for storage battery manufacture is also similar.

The demand for dry battery cells for the year 1973-74 had been estimated at 1150 million numbers while the production target for the Fourth Plan was set at the same number envisaging self-sufficiency in this line of manufacture. The demand for storage batteries for 1973-74 was estimated at 22.5 million numbers.

The bulk of the raw material required for the production of dry battery cells is available indigenously. Ammonium chloride, sodium chloride, carbon rod and acetylene black are the items procured indigenously, however, zinc, carbon rod, manganese ore, electrolytic manganese dioxide, special varieties of papers and miscellaneous chemicals are imported. Acetylene black and carbon rods being in short supply at home level, are also being imported. Attempts are being made progressively to manufacture a number of imported items in the country. In storage battery manufacture, progress of import substitution is about 80 per cent. Excepting lead and antimony, all other raw material items, such as, sulphuric acid, antimony, antimonial lead, lead oxide, synthetic rubber, rubber, PVC resin, paraffin wax and furnace oil are available indigenously.

Alongwith the growth in production, both the sectors–dry batteries and storage batteries - are witnessing export uptrend in recent years. During 1972-73, batteries and accumulators secured foreign exchange at a value of Rs. 28.50 million as compared to Rs. 25.57 million in 1971-72. Of this, flash lights and other primary batteries earned Rs. 11.50 million while the wet cell primary batteries brought in another Rs. 1.50 million. Acid type accumulators fetched Rs. 3.3 million while other accumulators netted as much as Rs. 11 million.

Flash light batteries were imported among others by Czechoslovakia and Nepal while Sudan and Nepal were prominent buyers of other primary batteries. Poland and German Democratic Republic were the main purchasers of wet cell primary batteries while Poland and Soviet Union were the principal markets for acid type accumulators. Both these countries were the bulk purchasers of other accumulators also.

IMPORT SUBSTITUTION IN TELEPHONE EQUIPMENT

Contributing sizeably to India's endeavour for import substitution, M/s. Indian Telephone Industries Limited (ITI) Doorawaninagar, Bangalore effected import substitution to the tune of Rs. 45.60 million during the preceding eight years. In the year 1972-73, ITI's foreign exchange saving was of the order of nearly Rs. 4 million.

The firm has been progressively striving hard to achieve greater indigenisation in the manufacture of imported components since its inception. During the year, it developed a number of high precision electronic items indigenously which includes diodes, reed relays and transmission coils. Among other components developed indigenously, PC connectors are significant.

Apart from resorting to import substitution to save foreign exchange, the company is also active in the field of exports. During 1972-73, its exports improved to Rs. 4 million from the preceding year's level of Rs. 3.21 million. In this year, ITI was able to secure fresh orders at a value of Rs. 8.80 million for supply, installation and commissioning of a 1000-line Automatic Exchange at Amman (Jordan) and from the East African Posts and Telecommunication Corporation.

ITI's production profile covers a large number of items, such as. telephones including headgear sets and auto telex dialing units, uniselector racks, group selector racks, final selector racks, composite racks, meter and other racks, meter plates, T 2000 switches, relay sets, test desk panels and cabinet type exchanges by the Strowger Division while selector frames, relay frames, distribution frames, power panels and supervision panels are the items manufactured by the Crossbar Division. ITI's Transmission Division undertakes manufacture of 12 channel equipment, 8 channel equipment, 3 channel equipment, multiplex equipment, microwave equipment (7 KMC and 6 KMC), interstice equipment, VFT in channels and terminating equipment - bays, coils and transformers. Besides these items, ITI's Ancillary unit in Jammu and Kashmir State turns out two way cords, three way cords, four way cords, five way cords, fuse 1.5 Amps, fuse 0.5 Amps, fuse 3 Amps and fuse 1 Amps. ITI's unit for the manufacture of transmission equipment located at Naini near Allahabad in UP is presently producing 12 channel group.

Today, ITI has a wide network of units located at Naini, Allahabad, UP (Transmission and Telephone Instrument Factory); Components Factory at Sri-Nagar, (Jammu and Kashmir); Switching Factory, at Rae Bareli, (UP) and Electronics Switching Factory (Kerala).

NEW COMPONENTS IN ELECTRONICS

With the development of a 30 mm TV picture tube by M/s. Bharat Electronics Limited (BEL), Jalahalli, Bangalore-13, the range of TV picutre tube manufacture in India has been widened. The development of the new TV picture tube by BEL is likely to bring down the cost of TV sets considerably and help in faster proliferation of TV viewing in the country.

The optimum viewing distance is considered as 5 to 6 times the size of the tube. The 310 mm TV sets would be well suited for homes with living rooms of the size 10 ft by 12 ft. It would also be good as a second set in some homes. The newly developed picture tube has following specifications :

Type-310 Cl P4, size-310 mm, focus - electrostatic, deflection - electromagnetic, deflection angle - 110° (diagonal) and heater-12 volts 75±7 MA. The picture tube has utility under typical operating conditions - Anode voltage : 10000 volts DC; grid No. 4 (focussing) : 100 volt DC; grid No. 2 : 300 volt DC and centhode voltage for visual extinction of undeflected focussed spot : 31 to 65 volts DC. The mechanical diamentions of the tube are : 240 mm (max) overall length and 315 mm (max) diagonal. It is also suitable for minimum useful screen of the size 254.1 mm horizontal and 201.7 mm vertical having a total area of 48,380 square mm.

Besides 310 mm TV picture tube, BEL has also to its credit introduction of 7 segments fluorescent indicator tube MF 41 F. The tube is of a great utility especially in the manufacture of desk calculator, counters and digital instruments. Besides, it is well suited for coupling to MOSICs. In addition to 10 numerals, decimal point and apostrophe have also been incorporated in the developed tube. The tube can be used on low voltage i.e. 60 V, enabling user to obtain longer life through low temperature and dissipation. It is suitable for both DC and Pulse operation and has wide range of applications. The highlights of the tube are longer life, low operating cathode temperature, low dissipation, wide range of operating on storage temperature and sleeved filament leads. It can be mounted in any position.

BEL's persistent endeavour in research and development are indeed yielding fruitful results. It has recently completed development of Beam Power Pentodes 6146 B and 6883 B. These tubes have high anode dissipation of 27 watts in continuous commercial service condition and are very much suitable for use as RF amplifier, oscillator, AF power amplifier and modular in the mobile and stationary equipment. These can be used upto 175 MHz in RF amplifier in class 'C' telephony and will find usage both for professional and amateur electronics engineers.

The special features of the tubes include - high input sensitivity and high power efficiency.

Maintaining pace with the import substitution drive of Indian electronics industry, BEL has also developed and brought out a wide range of cathode ray tubes with its own technical know-how. Taking into account the growing demand from manufacturers of general purpose oscilloscopes, monitoring and display instruments, cathode ray tubes of BEL are expected to be well received by them. These are being manufactured as per the code proposed by the Indian Statistical Institution (ISI) which would help users in selecting the right CRT.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PATIENT AND ANAESTHESIA MONITOR DEVELOPED

The Electronics and Radar Development Establishment, Bangalore, has successfully developed a patient monitor which is an advanced electronic system for continuously monitoring various parameters of clinical interest of patients. The equipment continuously displays on individual panel meters, temperature, respiration rate and heart beat of upto four patients at a time. Heart rates considered safe by the clinician, can be preset on individual panels, ECG recording can be initiated as and when required and time between two readings of the blood pressure of any patient can be preset from half an hour to four hours. Besides the panel meters for different readings, the ECG of all the four patients can be simultaneously displayed on persistance cathode ray tubes in the specially designed oscilloscope. Programmed sequence of recording can be broken by switching on to the manual mode of operation for any patient. The equipment which consists of the main unit, the ECG recorder and a cardioscope, has many more merits which all the more increase its utility.

The Electronics and Radar Development Establisment has also designed and developed an Anaesthesia Monitor which helps assessing the condition of the patient at frequent intervals. The equipment is in two self-contained units. One unit consists of the blood pressure recorder, the heart rate meter and electro cardioscope. The other unit measures blood PCO2, blood P02 and blood ρH. Like the Patient Monitor, the Anaesthesia Monitor also has the facilities of repeated automatic recordings of blood pressure, preseting of high and low heart rate, visual and audio alarms in caset the preset values are crossed. The electro-cardioscope is provided with oscilloscope having long persistance screen.

Safety of patient/operators from electrical shock has been completely ensured in these equipment. Majority of the components required for the manufacture of both the above equipment are indigenously available.

National Research Corporation of India, 61, Ring Road, Lajpat Nagar III, New Delhi-24 offers technical know-how for the manufacture of both these equipment, namaly, patient monitor and anaesthesia moniter.

NEW MANUFACTURING PROCESS FOR SODIUM HYDROSULPHITE

Sodium hydrosulphite is a powerful reducing agent used in textile printing and for bleaching of sugar, soaps, oils and straw. This chemical is already being produced in India and some quantity is being imported. The process being used by the indigenous manufacturers hitherto is based on consumption of zinc dust or mercury, both of which are imported. The highlight of the new process developed by the National Chemical Laboratory (NCL), Poona, is that it eliminates the use of both zinc dust and mercury and is based on sodium formate which is available indigenously.

The process consists of passing sulphur dioxide into aqueous methanolic caustic soda and the sodium bisulphite so formed, reacts with sodium formate and sulphur dioxide whereby the hydrosulphite separates out as anhydrous crystals. Methanol and sodium formate present in the mother liquor are recovered and reused. Sodium hydrosulphite produced by this process conforms to Indian Standard Institution specification No. 1919 and its purity ranges between 85 to 90 per cent.

The process can be usefully taken up by parties already manufacturing the chemical by using zinc or mercury. The process has been tried at laboratory scale and the product has also been tested.

All the raw materials used in the manufacture of sodium hydrosulphite, namely, sodium formate, caustic soda, sulphur dioxide and methanol are indigenously available. The equipment required for this process is the same as used in the chemical process industry.

The National Research Development Corporation of India, 61, Ring Road, Lajpat Nagar III, New Delhi-24, offers know-how for the manufacture of sodium hydrosulphite.

PAPER FROM JUTE STICKS

A new process for the manufacture of paper, utilising jute sticks as main raw material, has successfully been developed by the Forest Research Institute, Dehradun (UP).

At present, existing paper manufacturing units in India are using bamboo and sabai grass as major raw materials. Bagasse is also being used by some mills.

This simple process is semi-chemical, and is carried out in two stages. In the first stage, jute sticks in the form of chips are boiled with caustic soda solution. The boiled chips are washed with water to minimise possible alkali contents. In the second stage of the process, the treared chips which become sufficiently soft, are machanically fiberised into pulp. Futher processing is the same as done in the case of pulp obtained from other raw materials. Besides jute sticks which are abundantly available in Eastern parts of the country, the process utilises caustic soda, lime stone, chlorine, alum, resin, fillers, dyes and acid as raw materials. All these materials are available indigenously. Equipment used in this process is the normal pulp and paper making machinery.

The National Research Development Corporation (NRDC), 61, Ring Road, Lajpat Nagar III, New Delhi-24 offers technical know-how for this newly developed process.

EXTRACTION OF STRYCHNINE AND BRUCINE

An improved and inexpensive process for the manufacture of strychnine and brucine from the seeds of strychnos nux vomica has been deveolped by the Regional Research Laboratory (RRL), Bhubaneswar. Strychnine and strychnine sulphate are used as rodenticides, and brucine and its salts are useful for denaturing alcohol and as analytical reagents for separating optical isomers.

The conventional methods for the extraction and soparation of strychnine and brucine in their purest form are rather expensive. The new process developed by RRL is free from the drawbacks of the conventional methods and reduces the cost of production.

The process consists in grinding nux vomica seeds to required size, treating with alkali and extracting with a solvent in two stages. The extract is concentrated and treated with acid to precipitate strychnine sulphate, which is separated, recrystallized and treated with alkali to yield pure strychnine. Brucine sulphate present in the filtrate is basified and separated to yield crude brucine, which is finally purified. Strychnine and brucine prepared by this process conform to the following standards : strychnine sulphate, National Formulary (NF)-XI strychnine, NF-X; and brucine sulphate, NF-IX.

The raw materials and chemicals required in this process are nux vomica seeds, benezene, sodium hydroxide, sulphuric acid and charcoal. All these are available indigenously. All the machinery and components of the plant are also indigenously available.

SPACE SCIENCE IN INDIA

Space science and technology is one of the highly sophisticated areas of knowledge where most of the developments have taken place only after 1950. Although India has no ambitious programmes of moon landing or sending probes to planets, it hopes to succeed in satellite launch capability with its immediate objective of space technology for communication, television transmission and meteorological forecasting.

It was in November 1963 that India's first rocket a 'Nike Apache' supplied by the National Aeronautics and Space Administration (NASA) of USA went up from Thumba to probe into the mysteries of space. India decided to join the World Space Research Community in April 1972 for promotion of space research and international cooperation in exploration of space for peaceful purposes. The Indian programmes in space research in 1973-74 laid increasing emphasis on the practical aspects of the science and maximum utilisation of the results for large scale socio-economic applications for the benefit of the nation.

The Vikram Sarabhai Space Centre (VSSC) at Trivandrum is the main research and development centre in the field of space technology. It is engaged in the development of rockets and related hardware, propellants and chemicals and electronic instrumentation for rockets and satellite launch vehicles. Also, facilities have been built up at this Centre for testing various systems and sub-systems. The Centre also operates the Thumba Equatorial Rocket Launching Range. The Space Application Centre (SAC), Ahmedabad is responsible for planning and execution of space application projects and development of necessary hardware in the fields of communication technology, natural resources survey and meteorology.

At present there are three major projects in hand namely, Satellite Instructional Television Experiment (SITE), Indian Scientific Satellite Projects (ISSP) and Satellite Launch Vehicle-3 (SLV-3).

Satellite Instructional Television Experiment is aimed at bringing instructional messages through television to several thousand villages and remote areas of the country with the help of a satellite. Through an agreement, the Application Technology Satellite (ATS-F) of the US National Aeronautics and Space Administration (NASA) will be available to India for a period of about one year from the middle of 1975. This Experiment will consist of direct satellite television broadcasting to 2,400 villages in six seleted areas of the country. The responsibility of the Indian Space Research Organisation (ISRO) includes the provision of suitable antennae, front-end converters and ruggedised community viewing television sets for direct reception of the TV programmes from the satellite. Most of the instructional TV programmes will be produced by the All India Radio and a few experimental ones by ISRO. The Experimental Satellite Communications Earth Station (ESCES) of SAC in Ahmedabad will be the primary ground station from where the programmes will be beamed up to the satellite. In Delhi also an earth station is being set up. This will be used for transmitting the programmes directly to the satellite. Development of the necessary hardware for the ground segment and work relating to research aspects of the software for the instructional programmes are being carried out at SAC, Ahmedabad.

Indian Scientific Satellite Project : The first scientific satellite, weighing about 300 kg wholly designed and fabricated in India, will be put into a near circular 600 km orbit using a Soviet launch vehicle from the USSR under a collaborative agreement between ISRO and the USSR Academy of Sciences. The satellite will carry three scientific experiments : the first for investigations i.e. X-ray astronomy; the second for measuring the neutron and gamma ray flux from the sun; and the third for measuring ionospheric parameters. The prototype of the satellite structure, along with its various sub-systems, has been developed and tested for space conditions in India as well as in Moscow. All components and sub-systems have been subjected to rigorous tests to withstand the dynamic loads and vibrations during launch and separation of the satellite. Work on the final prototype of the satellite is nearing completion. The satellite is scheduled to be launched towards the end of 1974 and is programmed to carry three scientific experiments—one for investigations in X-ray astronomy, the second for measuring solar neutron and gamma rays and the third for measuring ionospheric parametres.

Satellite Launch Vehicle Project : This project has been undertaken to develop the first Indian satellite launch vehicle - a four-stage rocket capable of putting a 40-kg satellite into 400 km near-circular orbit.

The development phase of this project began in 1973 after the design phase was completed in 1972. The segmented motor technology for the first stage of the vehicle will be tested in rockets of 300 mm diameter by the end of this year. The motor cases for the fourth stage have been constructed and pressure-tested. The development of ground models of various sub-systems, such as, the on-board computer, PCM telemetry, inertial sensors, propellants etc., was undertaken for this project last year. A full-scale model of SLV-3 rocket has been fabricated to study integration problems. The preliminary design of the 40-kg Rohini Satellite (RS-1) to be launched by SLV-3 has been initiated. The RS series of satellites is intended to carry scientific and technological payloads.

The three preceding projects of ISRO are in the nature of building competence in the space technology and application areas. For realising long-term tangible socio-economic benefits from space technology, ISRO is concurrently proceeding with the study and planning of future domestic geostationary communication satellites, resource-survey spacecraft and launch vehicles. The major studies relate to the Indian National Satellite (INSAT) for domestic use and the satellite launch vehicle capable of putting a satellite in geostationary orbit (SLV-synchronous). These are summarised below :

INSAT : Studies have been carried out to define the parameters of a geostationary satellite with television, telecommunications and resources and meteorological survey capabilities.

SLV synchronous : Recognising the need to develop and build multistage launch vehicles more powerful than SLV-3 for launching communication and other application satellites into geostationary orbit, ISRO has initiated a programme of studies. A preliminary study has been carried out in this direction to develop an optimum approach and to define the parameters of a vehicle capable of placing a 800-kg. communication satellite into geostationary orbit.

The Vikram Sarabhai Space Centre (VSSC) is the main ISRO centre devoted to a wide range of activities relating to space technology. Research and development units, pilot production, test and launch facilities for small and medium size rockets are some of the major units which constitute this Centre. Some of the recent notable achievements and events in areas of space technology are :

(i) A 600-kg thrust liquid rocket engine was successfully flight-tested from Sriharikota and a three-tonne thurst liquid rocket engine has been static-tested.

(ii) Successful stage in the developmental activities relating to the SLV-3 launch vehicle, including propellants, hardware and guidance, control and electronic systems have been reached.

(iii) Preliminary studies to define the optimum approach for the development of a synchronous satellite launch vehicle and the parameters for such a vehicle capable of placing a 800-kg. satellite in geostationary orbit have been completed.

(iv) Tenth anniversary of Thumba Equatorial Rocket Launching Station (TERLS) signifying the successful launching of more than 600 rockets for scientific and technological purposes.

(v) A centaure—II B rocket carrying some of the sub-systems developed for use in satellite launch vehicle was launched from the Thumba Station on June 13, 1974. The rocket carried a payload of 80 kg. and reached an altitude of 120 km. A preliminary analysis of the signals indicated all subsystems in the payload functioned well.

Works also continued on development and production of advanced high energy propellants of various types, lasers, special purpose plastics, control and guidance instruments and telemetry.

Rocket launching facilities have been established at two places, one at Thumba and the other at Sriharikota. The latter is being developed as a national range for launching large multistage rockets—sounding rockets as well as satellite launching vehicles.

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The Space Application Centre at Ahmedabad is responsible for planning and executing projects involving the application of space technology. Efforts are at present concentrated in the following primary areas. The Satellite Instructional Television Experiment is the most important project now underway at this centre. The one year experiment is scheduled to begin in mid 1975. The other important field of this Centre's activity is development of Remote Sensing of natural resources. It is aimed at evolving a technology for providing a quick inventory of the country's resources, particularly, the renewable resources like food-crops, cash-crops, forests, water etc. With emphasis on research and development, it is planned to develop an automatic computerised data processing system. This system would convert signatures on the imagery into inventories of crop areas along with their state of vigour.

International collaboration with other space agencies abroad continued during 1973-74 in various fields of space research. Cooperation with the USA on the Satellite Instructional Television Experiment and the USSR on the Indian Scientific Satellite Project has been mentioned earlier. ISRO engineers have availed themselves of training facilities in different branches of space technology at various Research and Development Establishments of Centre National d' Etudes Spatiales (CNES - the national space agency) in Franch, of Deutsche Forschungs-Und Versuchsanstalt Fur Luft - und Raumfahrt E. V. (DFVLR) in West Germany and of NASA in the USA. The M-100 meteorological rockets, supplied by the Hydrometeorological Service of the USSR are regularly launched from TERLS to collect meteorological data. Indian scientists continued their scientific investigations on lunar samples supplied by NASA. Japanese scientists also participated in rocket experiments from Thumba. Indian scientists participated in the satellite meteorological experiments of CNES, France, and in the collection of data from the TD-IA scientific satellite of the European Space Research Organisation. ☐

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LARGE EXPORT ORDER FOR BASMATI RICE

The Indian Embassy in Kuwait has reported that the largest ever export deal of Indian Basmati rice has been just concluded. Coinciding with the opening of the overseas office of the State Trading Corporation of India in Kuwait, the transaction is for the sale of 25,000 tons. of rice for a value in excess of Rs. 160 million. The entire quantity was purchased from STC by M/s. Abdullah Syed Hashem Al Ghrabally, Kuwait. The supply is to take place before the end of December 1974.

India's total exports of rice were valued at Rs. 12.42 million in the first three quarters of 1973-74 (April-December 1973) and Rs. 37.7 million in 1972-73. During April-December 1973, the major importers were Bahrein Islands (1300 tonnes) valued at Rs. 3.3 million, Kuwait (1000 tonnes) at Rs. 3 million, U.K. 600 tonnes at Rs. 1.54 million, Mauritius 300 tonnes at Rs. 1.24 million and Dubai 500 tonnes at Rs. 1.22 million.

During 1972-73, Saudi Arabia proved to be the most important market for Basmati rice from India at Rs. 12 million (6830 tonnes). Dubai was the next best importer at Rs 6.4 million (2900 tonnes), followed by Muscat at Rs. 2.6 million, Bahrein Islands at Rs. 2.4 million and Kuwait Rs. 1 million while the export to Gulf countries totalled Rs. 23.5 million and other countries imported worth Rs. 14.2 million

Export trade in Basmati rice is canalised through the State Trading Corporation of India Limited.

Notwithstanding its importance in the domestic market for mass consumption, rice has come to be recognised as an important foreign exchange earner for the economy. The export of this variety of rice has no adverse impact on the availability of foodgrains within the domestic market on account of the fact that only a minor portion of its production is being supplied abroad.

It is estimated that the present availability of superior rice suitable for export is in the range of 50,000 tonnes to 60,000 tonnes per annum. Its production is confined to the states of Punjab, Haryana and U.P. The Government of India are organising steps to improve its production to the extent of 200,000 tonnes per year.

India is the largest producer of rice in the world and her annual production is in the neighbourhood of 45 to 46 million tonnes.

The above export order from Kuwait is significant in that it is for the first time that an export deal of such dimension has been concluded by any importing country.

TDA EXPORTS DOUBLED

The Trade Development Authority (16, Parliament Street, New Delhi) has nearly doubled its exports to Rs. 452 million in 1973-74 from Rs. 230 million in the preceding year. Orders booked by the Authority during the year were valued at Rs. 680 million of which Rs. 500 million worth were secured by the small scale sector. The export target for the year was fixed at Rs. 520 million while for 1974-75 it is placed at Rs. 750 million. The product range handled by the Authority includes electronics, bicycles, forgings, castings, industrial fasteners, readymade garments, sports goods, toys, dolls, handicrafts and leather products. Flashlight is a new addition to this range.

Besides the basic objective of promoting export of specific groups of manufactures to highly competitive markets including Western Europe, USA, Japan and lately Australia and New Zealand, the Authority is also engaged in the task of promoting new products location of new buyers and product adaptation. Thus, TDA's efforts during 1973-74 included sponsoring of 31 proposals aimed at building up export capacity. These proposals - 18 in the small scale sector and 13 in the medium scale sector-are reported to involve imported machinery worth Rs. 160 million which would generate export earnings of about Rs. 52 million per annum in foreign exchange.

TDA is also assisting the Indian Government in coordinating the implementation of commercial development programmes with the Federal Republic of Germany with its emphasis on exports of manufactured products by India. It is also helping the state governments in the country in mobilisation of their resources for export production.

Currently, the Authority has 551 clients, of which sixty per cent are from the small scale sector.

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DIESEL ENGINE PUMP SETS TO LIBYA

India-made diesel pump sets are gaining popularity abroad. During 1972-73, a total number of 9628 engine operated pumps (centrifugal) valued at Rs. 3.43 million were supplied to overseas markets as compared to 6604 numbers exported at a value of Rs. 2.70 million in the preceding year.

During the first nine months of 1973-74 (April-December 1973), 4156 numbers of these pump sets were exported to fetch Rs. 2.81 million in foreign exchange. Saudi Arabia who bought 2043 numbers at Rs. 0.89 million was the leading purchaser. Singapore, Zambia, Malaysia, Nigeria, Philippines, Iran, Kenya, Dubai and Federal Republic of Germany were among other important buying countries.

Recently, M/s. Kirloskar Oil Engines Ltd., Poona, one of the well known manufacturers of diesel engines and pump sets, have secured an order for supply of 1400 diesel engine pumping sets, 40 generating sets and spares for engines and pumps from Libya. Valued at about 300,000 Libyan dinars, the order is in addition to the one secured earlier by the Poona firm from Libya for supply of 1200 (5 HP) diesel engine pumping sets.

Besides supplying the pumps, Kirloskars have undertaken to train eight Libyans at their cost in India for repair and maintenance of the pumps. These trainees are already in India.

In India, there are 41 units in the organised sector, engaged in the manufacture of power driven pumps with a total licensed capacity of 460,818 numbers. Actual production was of the order of 278,000 pumps in 1972. These pumps have nearly cent per cent indigenous contents. About 70 per cent of the production is for agricultural purposes. Hovever, specialised pumps for petro-chemical/fertilizer industries are also manufactured in the country.

The industry is open for licensing and foreign collaboration proposals are considered on merits. Imports of these pumps are normally not allowed.

CABLES AND WIRES IN EXPORT TRADE

Contributing to the export effort of the cables and wires industry in India, the Consortium of cable manufacturers, Caluctta, have recently secured an export order valued at Rs. 42 million for supply of paper insulated lead covered cables to USSR. This is reported to be the fourth contract of its kind in succession and the largest single order from U.S.S.R. The order was negotiated by a delegation of the Cansortium. The supplies against the order will be made by six out of the seven member units of the consortium, and the largest share of the order will be executed by M/s. Industrial Cables Ltd.

One more order in the line has recently been received by another Indian firm, M/s. Indian Cable Co. Ltd. (9, Hare Street, Calcutta). Valued at Rs. 6.60 million, the order has been secured from M/s. China Light and Power Co. Ltd. of Hong Kong. The Indian firm is negotiating for an additional order of the same value with the importing firm in Hong Kong. This is expected to be concluded by the end of the current year.

India's exports ot cables and wires amounted to Rs. 126 million during 1972-73. Among a large variety of wires and cables supplied overseas by the Indian industry, insulated cables and wires and power aluminium conductors (ACSR) are particularly popular abroad. U.S.S.R., Iran, Sir Lanka, Qatar, Federal Republic of Germany, A.R.E., Sudan, Tanzania, Kuwait, Australia, Singapore, Hong Kong and Thailand are the principal markets.

The cables and wires industry in India is categorised as one of the Priority industries in the country. In 1973, the installed capacity and actual production of the various products manufactured by the industry was: AAC/ACSR conductors 106,850 tonnes and 58,000 tonnes; enamelled winding wires 20,194 tonnes and 15,000 tonnes; paper covered winding wires 15,580 tonnes and 5,220 tonnes; PILC/PVC power cables 21,310 kms. and 15,000 kms; PVC/VIR cables 1,213 MCM and 620 MCM; dry core cables 4,000 kms. and 3,000 kms; coaxial cables 4,250 kms. and 800 kms and bare copper conductors 14,200 tonnes and 1,000 tonnes.

GUJARAT CORPORATION IMPROVES EXPORTS

The Gujarat Export Corporation (GEC), Ahmedabad, has succeeded in stepping up its exports to Rs. 12.30 million in 1973-74 from Rs. 8.90 million in the preceding year.

A state sponsored organisation, GEC is engaged in export of a wide range of goods. The major segment of their export is, however, in the engineering sector. The examples of their successful export effort in the engineering field include diesel engines, electric motors and starters, transformers, centrifugal and other varieties of pumps, castings, aluminium conductors, steel tubes, pressure vessels, water metres, builder's hardware, machine tools and foundry equipment. They have also established themselves in the export trade of bicycle accessories, steel furniture and a broad range of industrial machinery, such as, textile machinery, printing machinery, agricultural machinery and pharmaceutical machinery.

Aside from engineering products, the Corporation has a proven record in the export of chemicals including insecticides and pesticides, food colours and dyes, as also chemicals for paint, paper, textile and pharmaceutical industries. Some of the other areas in which the Corporation has successfully exported are processed fruits and food products, spices and vegetables, marine products, handicrafts, plastics, stationery items, textiles and cotton waste.

Of the wide spread overseas customers that the Corporation has served so far, the prominent are the USA, Canada, UK, Netherlands, Switzerland, Greece, West Germany and Sweden among the developed market economies. Their export supplies have also reached the West and South East Asian countries and the African continent.

EXPORT PERFORMANCE AND POTENTIAL

INDO-THAILAND TRADE

The principal feature of the Thai economy is agriculture contributing about 60 per cent of the exports, 30 per cent of the gross domestic product and providing employment for 75 per cent of the population. In order to broaden the industrial base of the country, the Thai Government undertook heavy investment in the industrial sector through five year enonomic plans.

There has been a substantial expansion in the external trade of Thailand. Imports and exports registered 141 per cent and 132 per cent rise respectively between 1963 and 1972. Thailand's exports consist almost entirely of primary products, mainly rice accounting for about 33 per cent, followed by tin, rubber and maize. Her imports are made up of a wide variety of durable and non-durable consumer goods, manufactured goods and capital goods.

Four countries namely Japan, USA, UK and West Germany account for nearly 65 per cent of Thai imports. In spite of the proximity and high potentiality of the Thai market, India's share in Thailand's external trade is less than one per cent. At present the trade between the two countries is more or less balanced, although the volume of trade is not considerable. Trade relations between the two countries are now regulated under the Trade Agreement signed in December 1968 under which the two parties agreed to facilitate diversification and expansion of the two-way trade.

India's exports to Thailand rose from Rs. 46 million in 1971-72 to Rs. 57 million in 1972-73. In the first three quarters of 1973-74 - (April-December 1973), exports improved still further to Rs. 56 million from Rs. 44 million in the same period of the preceding year, a rise of 27 per cent.

Traditionally India's exports to Thailand are cotton textiles. Commoditywise figures for 1973-74 are available only upto September 1973. Exports of cotton textiles during April-September 1973 were valued at Rs. 8 million against only Rs. 1 million in April-September 1972. Transport equipment fetched Rs. 2.8 million in April-September 1973 (Rs. 2.4 million in April-September 1972). Value of chemical elements and compounds exported in the first two quarters of 1973 was Rs. 2.1 million (Rs. 1.6 million in April-September 1972). Drugs and pharmaceuticals earned Rs. 1.5 million in April-September 1973 (Rs. 1.3 million in April-September 1972). Exports of machinery were maintained at Rs. 2.7 million in the two years. In case of metal manufactures, there was a decline in exports from Rs. 6.9 million in April-September 1972 to Rs. 4.4 million in April-September 1973. Exports of iron and steel also fell from Rs. 2.8 million in April-September 1972 to Rs. 1.8 million in April-September 1973 and ground nut cake from Rs. 3.1 million to Rs. 1.2 million.

India's imports from Thailand during 1972-73 aggregated to Rs. 55 million (Rs. 38 million in 1971-72). The main item of import from Thailand was rice accounting for 73 per cent of the total imports in that year. Other imports were antimony ore and hides and skins. In 1973-74, there were no imports of rice till September 1973. Imports of other items also were somewhat less than the level in the preceding year.

Thailand has been resorting to the 'Social Development Plans'. Currently, the economy is passing through the 1972-76 plan. Their plans aim at extensive inland waterways, irrigation, power, highways, railways and port developments, expansion of educational facilities, creation of industrial estates, modernisation of agriculture, extension of telephone systems and telecommunication and television network. Obviously, the plans necessitate large imports of plant, machinery equipment and building hardware for accomplishment of their projects and railways, roadways, telecomunications etc. In this context, India's exports, particularly of engineering items, technical know-how and consultancy services, to Thailnnd could be stepped up.

On the basis of India's exports to Thailand during the past few years, it may be said that increased export possibilities from India to Thailand exist in manufactures of metals, feeding stuffs for animals, chemical elements and components, dyeing, tanning and colouring materials, transport equipment (particularly trucks) and machinery (electrical and non-electrical) in which India's share in global Thai imports is negligible.

EXPORT TRADE IN ELECTRICAL MACHINERY AND APPLIANCES

Electrical machinery, apparatus and appliances constitute a dynamic segment of India's export growth. These exports improved from Rs. 186.74 million in 1971-72 to Rs. 234.30 million in 1972-73. In the first three quarters of 1973-74 (April-December 1973), the export value stood at Rs. 183.45 million as compared to Rs. 181 million in the same period of the preceding year.

During 1972-73, the export contribution of electrical power machinery and switchgears totalled Rs. 56.15 million while that of the equipment for distributing electricity was of the order of Rs. 66.57 million, telecommunication apparatus Rs. 28.78 million, domestic electric equipment Rs. 30.83 million and other electrical machinery and apparatus Rs. 51.48 million.

In the first three quarters of 1973-74, the export contribution of electrical power machinery and switchgears was of the order of Rs. 48 million as compared to Rs. 39.88 million in the same period of the preceding year. Equipment for distributing electricity secured Rs. 37.68 million as compared to Rs. 56.29 million, telecommunication apparatus Rs. 27.7 million as against Rs. 42 million, domestic electric equipment netted Rs. 22.88 million as compared to Rs. 21 million and other electrical machinery and apparatus brought in foreign exchange worth Rs. 46.84 million against Rs. 41 million in the respective periods.

In the group of electrical power machinery, the major categories of export are generators (AC & DC), complete generating sets with diesel engines AC squirel cage induction motors (3 phase) in the range of 1 H.P. to 100 H.P. and above; A.C. slipring motors of 10 to over 100 HP, parts and accessories of electric motors, transformers upto and above 132 K.V. rating and even above 10,000 KVA, rectifiers and rectifying apparatus, choke coils. oil circuit breakers, motor starters, motor oil meters, switch fuse units, switch boards and control panels, potentiometers and so on. In the first three quarters of 1973-74, the export effort in electrical power machinery totalled Rs. 23.66 million as compared to Rs, 304.5 million in the entire preceding year (1972-73). Among the markets for AC and DC generators were Zambia, Sudan, Bangladesh, Malaysia, Singapore, Saudi Arabia and Tanzania. AC squirrel cage induction motors of varying capacity were supplied, inter alia, to German Federal Republic, New Zealand, U.K., Thailand, Singapore, and German

Democratic Republic also figured in the list of prominent buyers of other electric motors. Transformers up to 37.5 k.v. rating up to 3000 KVA were mainly supplied to Malaysia and Mauritius, Zambia, Kenya and Sri Lanka. Other transformers and accessories were also bought principally by Malaysia and Uganda.

Malaysia was again the leading importer of motor control gears and motor starters. Libya, Iraq, Indonesia, Kuwait, Hong Kong and Qatar were among the buyers for switch fuse units. In the group of equipment for distributing electricity, insulated wire cables fetched as much as Rs. 35.64 million during the first three quarters of 1973-74 as compared to Rs. 63.89 million in the full preceding year of 1972-73. Enamelled copper winding wires, insulated copper winding wire strips, plastic insulated wire, plastic insulated cables and fluxes and paper insulated cables are among the major insulated wire cables exported from India. In addition, electrical insulated equipment, such as, porcelain insulators and electric insulated fittings other than porcelain are also offered for export. U.S.S.R. is an important market for paper insulated cables and it bought worth nearly Rs. 12 million in the first three quarters of 1973-74. Besides the Soviet Union, Singapore, Libya, Hong Kong and Kuwait are the major buyers of other insulated cables.

India exported transistor radio receiver sets worth Rs. 10 million even during the first three quarters of 1973-74 as compared to the same amount of foreign exchange in the full year of 1972-73. Nigeria, U.K., Netherlands, Czechoslovakia and Dahomy Republic were the principal importers. In addition to transistor radios, domestic radio receivers and components and parts were also supplied abroad.

In the telecommunication equipment sector, the items exported include telephone apparatus and instruments and parts, microphones, loudspeakers and amplifiers. Bangladesh, Kenya, Tanzania, U.K. and Singapore were among the principal buyers of telephone and telephone equipment and parts. For amplifiers, the principal markets were the U.S.S.R., Sri Lanka, Nigeria and Iran. In the group of domestic electric equipment, refrigerators secured Rs. 2.5 million during the first three quarters of 1973-74 as compared to Rs. 2.8 million in 1972-73. Poland has been the major market. It bought worth Rs. 2.6 million (4784 numbers) in 1972-73 and worth Rs. 2 million (5798 pieces) in the first three quarters of 1973-74. Ceiling fans constitute another major area of export growth. These fetched foreign exchange worth Rs. 19 million during 1972-73 and Rs. 12.5 million in the first three quarters of the year that followed. Major markets for these fans are Iraq, Kuwait, Nigeria, Saudi Arabia and Sudan. Apart from ceiling fans, the Indian industry exported pedestal fans, table fans, air circulators and portable blowers. Also a sizeable amount of foreign exchange was earned through the exports of regulators and parts of electric fans. Besides refrigerators and fans, the exports mainly included electromagnetic domestic appliances, domestic room heaters and water metres, smoothing iron and other domestic appliances and parts.

Batteries and accumulators constitute yet another example of active export trade from India. While during 1972-73 these products were exported to the tune of Rs. 28.49 million, these secured as much as Rs. 22 million in the first three quarters of 1973-74. Dry cell primary batteries was the prime export category of export in this line. Sudan, Nepal and German Federal Republic are the important markets. U.S.S.R. and Poland are the leading buyers of accumulators of lead acid type. Electric lamps secured Rs. 3 8 million during 1972-73 and Rs 2 million in the first three quarters of 1973-74. Czechoslovakia followed by Iran constituted the principal buyers of fluorescent tube lamps. Also the export range included mercury vapour lamps, other electric discharge lamps, fluorescent tube lamps and parts, torches and bulbs.

PROGRESS IN MEDICINAL EXPORTS

Substantial improvement is discernible in India's export trade of medicinal and pharmaceutical products in recent months. The first nine months of 1973-74 (April-December, 1973) witnessed export earning of these products at about Rs. 92 million as compared to only Rs. 69 million during the comparable period of April-December 1972. In the full year of 1972-73, the exports were valued at Rs. 103 million while in 1971-72 it stood at Rs. 96 million.

Although a significant importer itself of a variety of sophisticated pharmaceuticals from the world markets, India offers a wide range of these products for export. Understandably during April-December 1973, medicaments constituted the major category of exports in this group. They earned Rs. 62 million during the period while during 1972-73 the exports were valued at Rs. 70 million. Ayurvedic and Unani medicines were mainly supplied to U. K. Nepal, Sri Lanka, Kenya, Japan, Singapore and Syria while Homeopathic medicines were principally imported by Hong Kong, Thailand, Singapore and Bangladesh. U. S. S. R. was a leading buyer of proprietory patent medicines and its purchases were worth Rs. 11.4 million out of the total export of these medicines valued at Rs. 14.6 million during April-December 1973. In fact, the Soviet Union purchased these medicines in a big way for the first time in this period. Other Indian medicaments popular abroad during the period under review included acytyl salicylic acid, antacid digestive preparations, antidiabetic drugs, asthma and hayfever preparations, gripe water, headache remedies, medicaments for cough, cold and other infections as well as blood purifiers.

India's pharmaceutical industry also exports vitamins and provitamins, among others, to Sri Lanka, Thailand, Singapore and Tazania. Penicillin, streptomycin and other anti-biotics fetched foreign exchange worth Rs. 9 million in the first three quarters of 1973-74 and Rs. 10.7 million during 1972-73. In this group, chloram phenicol and preparations were supplied, among others, to Muscat, Tanzania, Kenya, Burma and Bangladesh. U.S.A. turned out to be a major importer of oxytetracycline preparations which netted Rs. 2.6 million in the first three quarters of 1973-74. During 1972-73, these preparations secured Rs. 5.7 million of which U.S.A ordered worth Rs. 3.9 million. Hong Kong was another market at Rs. 1.6 million. Streptomycin and preparations were supplied among others to Tanzania, Kenya and Muscat.

Salts and derivatives of nicotine were imported mainly by Japan at a cost of Rs. 1.2 million. Democratic People's Republic of Korea and U.S.A. were the leading markets. German Federal Republic, Hungary, Bulgaria and Netherlands were the principal buyers of quinine alkaloids which secured Rs. 2.6 million during the period under review in 1973-74. Bulgaria was an important market for quinine sulphate while U.S.A., was the principal importer of salts and derivatives of nuxvom alkaloids brueine.

Pharmacy goods like adhesive bandages and tapes, medicated lint, plaster of Paris and dental fillings were exported to the tune of Rs. 8.7 million during April-December 1973 as compared to Rs. 7.5 million in 1972-73. Major products exported in this group were bandages for which a long list of importers included Poland, Bangladesh, Thailand and the U.K.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

SPOTLIGHT ON AIR COMPRESSORS INDUSTRY

With twelve manufacturing units and an installed capacity of 12,000 numbers (1973) per year, the air and gas compressors industry in India has made a good headway. The industry's actual production in 1973 was of the order of 6000 numbers. Used for increasing pressure of gas, air blasting and for supplying air and other gases at high pressure, the major types of air compressors comprise not only high pressure air compressors but non-lubricated type compressors, rotary air compressors, reciprocating type compressors of both portable and stationary varieties and garage compressors.

The raw material mix that is indigenously available for the manufacture of air compressors comprise spring valves, castings and forgings. Seamless tubes and valve plates are the major materials required to be imported.

The compressor industry has made such good progress in recent years that neither financial nor technical foreign collaboration is considered necessary for its further improvement and diversification. There are three Indian Standard specifications (ISI) for the compressors produced in India, namely, measurement of air flow of compressors and exhausters (5338 part I - 1969), testing of positive displacement type air compressors and exhausters (5456-1969) and glossary of terms relating to compressors and exhausters (5727-1970).

Besides the progress in its manufacturing capacity, the compressor industry in India has also come to contribute substantially to India's foreign exchange earning. Its exports during 1972-73 totalled Rs. 4.70 million, and Rs. 3.97 million in the first three quarters of 1973-74 (April-December 1973). Major destinations for these exports have been Arab Republic of Egypt, Philippines, Greece, Netherlands, Nigeria, Iran, Muscat and Belgium. During April-December 1973, Bahrein Islands purchased free piston generator compressors worth Rs. 0.48 million, followed by Italy (Rs. 0.33 million), Arab Republic of Egypt (Rs. 0.31 million), Australia (Rs. 0.34 million), Abu Dhabi (Rs. 26 million) France (Rs. 0.24 million), Sri Lanka (Rs. 0.22 million), Kenya (Rs. 0.18 million) and Nepal (Rs. 0.16 million). The total quantum of exports in this period was 1064 numbers while in 1972-73 it was 1640 numbers.

ON WELDING ELECTRODES

Electrodes are mainly used for welding of mild steel, high tensile steel, alloy steel and stainless steel, while welding equipment consists of diesel/petrol engine driven generator type arc welding machines, motor generator type arc welding machines, transformer type arc welding machines and so on. There are 20 manufacturing units in India engaged in the production of welding electrodes. With an annual installed capacity of 506 MRM, the actual production in 1973 was of the order of 360 MRM.

The electrode sector is considered to be a a priority industry in India and technical collaboration is permissible for special types of electrodes. The indigenously available raw materials for the manufacture of this industry include electrode quality steel, wire rods and bars, billets, rutile and certain chemicals. Some of the other raw material requirements are, however, imported and these are stainless steel wire, steel and alloy steel wire, ferro alloy and non-ferrous wires and certain chemicals that are not indigenously available.

The welding electrode industry in India is also active on export front. The export value of iron and steel welding electrodes (coated or covered with flux) was of the order of Rs. 4.57 million during 1972-73. In the first three quarters of 1973-74, the exports totalled over Rs. 3 million. The major markets during 1972-73 were the Arab Republic of Egypt (Rs. 2.06 million), Burma, Kenya, Saudi Arabia, Sri Lanka, Dubai, Qatar, and Yemen Arab Republic. During April-December 1973, the important markets were Iran, Sri Lanka, Kenya, Kuwait, Nigeria, Saudi Arabia Zambia and Arab Republic of Egypt. The quantum exported was of the order of 2.5 million kg. in 1972-73 and 1.72 million kg. in the period April-December 1973.

IMPORT SUBSTITUTION IN PAPER AND PRINTING MACHINERY

Import substitution is an effective tool of reducing India's dependence on imports. Happily, growing number of firms in the industrial field are emerging, in recent years, as pioneers in developing a range of sophisticated industrial machinery being imported hitherto.

M/s. Dadiala Engineering Works, New Delhi, for instance, is one of such pioneering firms which has to its credit development of sophisticated paper conversion and printing machines indigenously without any foreign collaboration. The development of such sophisticated machinery by this small scale unit indeed deserves mention, particulary, viewed against the background that foreign collaboration is a common feature in the line of industrial machinery manufacture. The firm has been awarded a silver shield and a cash award of Rs. 3000/- from the Government of India in recognition of its success in this field of manufacture. Apart from this, it is claimed that the firm has, so far, developed a number of significant machines and saved sizeable amount of foreign exchange.

The New Delhi firm has been manufacturing paper conversion machines, such as, slitting, shearing and coating machines and drinking straw making plant since its inception in the early Fifties. Later on, Aniline Rotary Printing Machine was also added to the firm's range of manufacture. Way back in 1962, the firm was approved by the Government of India as the sole indigenous manufacturer of a number of paper conversion machines. Today, its manufacturing range includes quite a few machines, such as, paper-bag making machines, spiral paper tube winder, rotogravure printing machines and other machines in the line. Its endeavour to make further improvement in the machines, already developed earlier, are yielding fruitful results. For instance, it has recently achieved further development in the manufacture of paper-bag making machine by converting it into a multi-wall-paper-bag making machine.

Marching on the path of diversification, the New Delhi firm developed a sophisticated printing machine known as the Web Offset Printing Machine for Newspaper in 1969-70. The printing capacity of this machine ranges between 10,000 to 15,000 copies per hour. The first Web Offset Printing Machine has already been sold to a Newspaper in 1971. The firm is also active in the manufacture of offset printing machines and supplying these at home level taking into account the wide requirement of these machines in the country.

Indian economy has already reached a stage of near self-sufficiency in respect of quite a few areas of industrial machinery like industrial and power boilers, material handling equipment, such as, conveyors, construction equipment, tea processing equipment, weighing machinery, certain types of chemical equipment, asbestos cement production plant and dairy equipment In respect of sugar mill machinery, the import content is only 8 per cent while in cement machinery the pack value of foreign exchange in respect of both, the wet process and dry process plants is of the order of Rs. 1.2 million and Rs. 1.9 million respectively. In the field of building and construction machinery, the average of import content is 10 per cent, though it varies from item to item individually. Tea processing machinery, rubber machinery (in respect of items being produced in the country), rayon manufacturing machinery, tobacco processing machinery, mining and coal washery machinery, diamond core drills and weighing machinery are the specific areas of industrial machinery where indigenous content is over 90 per cent while the percentages of import content in respect of other machinery are : synthetic fibre machinery 35 per cent, metallurgical machinery upto 15 per cent, water well rigs 15 per cent, industrial boilers (exclusive of steel items) 8 to 10 per cent, power boilers (exclusive of steel items) 25 per cent, reduction gears 15 per cent, paper and pulp machinery 30 to 35 per cent (for complete paper plants upto 50 TPD capacity), chemical and pharmaceutical machinery 20 to 30 per cent (inclusive of scarce raw materials not available indigenously).

FARM MACHINERY AND EQUIPMENT

A PROFILE

Indian technology in the manufacture of farm machinery and equipment which cater to the requirements of its most vital sector-Agriculture, has come of age. The farm machinery industry in India manufactures a wide range of machinery in the line amongst which agricultural discs, combine harvestors, diesel engines, power driven pumps and power tillers are most significant. Agricultural discs, combine harvestors, diesel engines and power driven pumps industries are included in the priority sector while agricultural tractors and power tillers industries are in the core sector.

In the priority sector industries, the installed capacity in respect of agricultural discs is 500,000 numbers and the licensed capacity is 560,000 numbers while for combine harvestors the installed capacity is placed at 500 numbers against the licensed capacity of 1200 numbers. In the area of diesel engines and power driven pump manufacture, the installed capacity is of the order of 192,000 numbers and 466,780 numbers and the licensed capacity is 265,000 nnmbers and 460,818 numbers respectively. In the core sector industries, the installed capacity in respect of Agricultural tractors and power tillers is of the order of 56,000 numbers and 10,000 numbers respectively while the licensed capacity in these lines is 147,000 numbers and 41,000 numbers. In some lines of manufacture, an additional capacity has been approved. For instance, in the area of agricultural tractor manufacture additional capacity of 35,000 numbers has been approved which would increase the total capacity to the tune of 60,000 numbers by the end of 1973-74. Similarly, in the field of power driven pumps, the additional capacity to the tune of 13,400 numbers has been approved taking the total capacity to 470,977 numbers by the end of 1973-74.

During 1972, in the organised sector there were 6 units engaged in the production of agricultural discs in the private sector. Their production during the year was of the order of 51,437 numbers. In fact, during 1971, the production was much more (114,814 numbers). In the same year (1972), the output of combine harvestors of one unit was 237 numbers as compared to 265 numbers in the preceding year. In the area of diesel engine manufacture, 27 units produced 79,000 numbers while 41 units engaged in the production of power driven pumps turned out 278,000 numbers in 1972. In the same year, 17 units engaged in the production of agricultural tractors manufactured 18,301 numbers and 6 units in power tiller manufacture achieved production of 217 numbers.

Industrial policy in respect of agricultural discs, combine hasvestors, diesel engines, power driven pumps and power tillers is open for further licensing while in the case of agricultural tractors liberalised licensing is followed. Foreign collaboration is permitted in the manufacture of agricultural tractors and combined harvestors only. However, in the case of agricultural discs, diesel engines, power driven pumps and power tillers, it is considered on merits.

Raw material for the manufacture of agricultural discs is mainly procured from abroad. High carbon steel sheet plate having carbon content above 0.65 per cent is imported. Import substitution in the line can be possible when the above item is produced indigenously. Pig iron, non-ferrous metals, steel forgings and castings are the specific raw materials available indigenously for the manufacture of agricultural tractors, though some items, such as, CRCA sheet, bright/black round bars, bright/black flats, bright strips plates of EN-9, and seamless steel tubes are required to be procured from abroad.

For combine harvestors, alloy and constructional steel malleable iron/cast iron and castings are available within the country but CRCA sheets and plates above 5 mm are required to be imported. In this line, 100 per cent import substitution has been achieved in case of vertical engines below 15 HP and horizontal engines below 50 HP and over 90 to 95 per cent indigenous content go in the manufacture of other type of engines (excluding engines for ocean going vessels). About 90 per cent of the production of diesel engines is in the small HP(below 15 HP) range.

Raw materials for power driven pump production comprise pig iron, M. S. shaftings, non-ferrous metal and stainless steel shaftings of which only stainless steel shaftings are imported.

Many items of farm machinery manufactured in India find ready market overseas. However, in wvie of the growing home demand for the machinery, many of the machinery items are sold within the country. Among other things, modernisation of agriculture is one of the basic reasons which is mainly responsible for rising domestic demand. Despite this, many items of agricultural machinery are exported, mainly to co-developing countries.

The export range includes harrow discs, plough discs, tractor ploughs, animal or hand driven machinery, threshing and sorting machines, diesel engines and other machinery in the line including parts and accessories. During 1972-73, India's export earning of these items totalled Rs. 6 million. During the year these were supplied to Nepal, Zambia, Sri Lanka, Iran, Nigeria, Uganda and Afghanistan.

RECENT TRENDS IN INDIA'S IMPORT TRADE

In the first three quarters of 1973-74 (April-December 1973), India's import bill amounted to Rs. 18,590.66 million as compared to Rs. 12,366.84 million in the same period of 1972-73. In the full years of 1972-73 and 1971-72, the import value stood at Rs. 17967.36 million and Rs. 18,245.42 million respectively.

The import bill for the petroleum and petroleum products rose substantially. It was of the order of Rs. 2,796 million during April-December 1973 as compared to Rs. 1,493 million during April-December 1972. In the full year of 1972-73, it was of the order of Rs. 2,040 million. Crude petroleum imports totalled Rs. 2,000 million against Rs. 1,064 million and Rs. 1,475 million respectively in these three periods while the import bill of petroleum products was Rs. 796 million, Rs. 430 million and Rs. 592 million respectively.

In the Food and Live Animals group, import of wheat was as much as Rs. 1,828 million in the first three quarters of 1973-74 as compared to Rs. 34 million in the same period of the preceding year. Imports of wheat were reduced to the tune of Rs. 59 million as compared to Rs. 103 million but those of unmilled cereals (other than wheat, rice, barley and maize) shot up to Rs. 853 million as compared to only Rs. eleven thousand. The import of cereal preparations was reduced to Rs. 57 million as compared to Rs. 75 million. Thus the overall import bill on account of cereals and cereal preparations went up to Rs. 2,816 million from Rs. 217 million in the periods under review.

Import trade in milk and cream came down to Rs. 84 million from Rs. 134 million, butter Rs. 19 million from Rs. 28 million, fruits and nuts Rs. 261 million against Rs. 297 million and sugar Rs. 6 million against Rs. 6.2 million. Imports of fish and fish preparations however, rose to Rs. 12 million from Rs. 1.3 million, spices to Rs. 6.7 million from Rs. 5.8 million while dry fruits were bought at Rs. 57 million as compared to Rs. 66 million. In all, the group import of food and live animals totalled Rs. 3,285 million as compared to Rs. 777 million.

Textile fibres and their wastes were imported to the tune of Rs. 795 million as compared to Rs. 948 million. The major decrease was in respect of cotton–Rs. 479 million against Rs. 763 million. The import of raw wool and raw jute has, however, increased to Rs. 138 million from Rs. 26 million and Rs. 121 million against Rs. 6.5 million. Mainly on account of the increased import bill of soft fixed vegetable oils, import trade in vegetable oils and fats rose to the level of Rs. 444 million from Rs. 103 million.

Chemical imports into India too shot up during April-December 1973 as compared to the same period of the year that preceded. In these two periods the import value was Rs. 2,273 million and Rs. 1559 million respectively. The increase in imports was uniform in all the sectors of chemicals but was particularly so in respect of chemical elements and compounds, medicinal and pharmaceutical products, manufactured fertilisers and plastic materials. Chemical elements and compounds comprising organic and inorganic chemicals were imported to the tune of Rs. 752 million as compared with Rs. 592 million. Import bill on account of medicinal and pharmaceutical products rose to Rs 186 million from Rs. 168 million in the respective periods. Manufactured fertilizers were imported at a value of Rs. 946 million against Rs. 474 million. The import of plastic materials also went up to Rs. 106 million from Rs. 83 million.

Imports of paper and manufactures have gone up. They amounted to Rs. 19.66 million during the first three quarters of 1973-74 as compared to Rs. 184 million in the same period of 1972-73.

Purchases from abroad of precious and semi-precious stones also rose in their import value to Rs. 648 million from Rs. 383 million in the comparable periods.

Although Indian purchases in respect of iron and steel ingots, universals and plates and pig iron dropped, imports of steel tubes and pipes, wires and wire rods, hoops and strips and bars and rods moved up. The total effect in respect of iron and steel was that they were valued at Rs, 1604 million against Rs. 1569 million in the periods under review.

Non-ferrous metal imports increased substantially. This is particularly so in copper, lead, tin and zinc.

Copper imports totalled Rs. 517 million against Rs. 358 million while those of lead amounted to Rs. 81 million as compared to Rs. 75 million, tin Rs. 78 million against Rs. 48 million, zinc Rs. 177 million as against Rs. 164 million. Imports of aluminium came down to the level of Rs. 19.54 million as against Rs. 23.32 million.

In the machinery and transport equipment sector whose total import value rose to Rs. 4326 million against Rs. 3493 million, machinery imports alone accounted for Rs. 2912 million as compared to Rs. 2094 million while transport equipment imports were Rs. 609 million against Rs. 546 million. Interestingly, import trade in electrical machinery, apparatus and appliances fell down to only Rs. 805 million as against Rs. 851 million in the comparable periods. The import decline was in respect of all major categories of products which are imported in this group including electrical power machinery and switchgears (Rs. 297 million against Rs. 340 million), telecommunication apparatus (Rs. 126 million against Rs. 162 million) and equipment for distributing electricity (Rs. 82 million against Rs. 117 million). The major non-electric machinery for which imports have increased are power generating machinery machines for special industries and textiles and leather machinery. Imports of metal making machinery as well as of agricultural machinery and implements witnessed a drop. Of the transport equipment sector, imports of railway vehicles totalled Rs. 166 million as compared to Rs. 135 million, road motor vehicles Rs. 213 million against Rs. 205 million, aircraft Rs. 181 million against Rs. 180 million and ships and boats Rs. 45 million against Rs. 24 million.

The import of scientific, medical, optical, measuring and controlling instruments stood at Rs. 115 million as compared to Rs. 95 million.

A brief review of the destination pattern of imports reveals that U.S.A. was the principal market from which India imported heavily in the first three quarters of 1973-74 as compared to the same period of the preceding year; the import value was Rs. 3619 million as compared to Rs. 1491 million. From Canada too the purchases were stepped up to the level of Rs. 844 million as against Rs. 496 million.

The entire group of European Common Market countries supplied products worth Rs. 4870 million against Rs. 3886 million. From U.K. the imports were valued at Rs. 1796 million against Rs. 1600 million; from the Federal Republic of Germany Rs. 1309 million against Rs. 1155 million, from France Rs. 507 million against Rs. 260 million, from Belgium Rs. 490 million against Rs. 326 million, from Netherlands Rs. 357 million against Rs. 248 million and from Italy Rs. 331 million against Rs. 229 million.

In the ECAFE region from which Indian imports were valued at Rs. 4163 million against Rs. 2869 million, the Japanese market supplied worth Rs. 1700 million against Rs. 1187 million. From Iran the imports rose sizeably to reach the level of Rs. 1454 million as compared to Rs. 907 million. Other important markets in the region from which Indian imports went up were Australia, Malaysia, Nepal, Bangladesh, Singapore, Thailand and New Zealand.

From the African continent, Indian imports totalled Rs. 1245 million as compared to Rs. 1280 million in the comparable period. From Latin America, however, the imports rose to Rs. 470 milllon from the level of Rs. 46 million.

The East European countries have exported to India worth Rs. 1743 million against Rs. 2484 million, of which USSR supplied products wortn Rs. 762 million as against Rs. 682 million. From Bulgaria, Czechoslovakia, German Democratic Republic, Poland and Yugoslavia also the imports increased while they were down in respect of Hungary and Rumania.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PREPARATION OF PARTIALLY CALCINED DOLOMITE

The Central Building Research Institute (CBRI), Roorkee (UP), has developed a know-how for the preparation of partially calcined dolomite for use in magnesium oxychloride cement compositions.

Magnesium oxychloride cement compositions are made from magnesium oxide and magnesium chloride and fillers, such as, calcium carbonate, gypsum, sand and saw dust. The chief source of magnesium oxide for this purpose is the mineral magnesite. In India, most of the magnesium oxide required for oxychloride cement industry is obtained from magnesite deposits of Salem (Madras). High initial cost and considerable transport expenses in obtaining magnesium oxide from this source have restricted the larger application of magnesium oxychloride cement.

Dolomite and dolomitic lime-stone could be another source of magnesium oxide. These minerals consist of magnesium carbonate and calcium carbonate. When it is calcined at about 700°—800°C, it would produce a partially calcined dolomite or dolomitic lime stone consisting of magnesium oxide and calcium carbonate. This partially calcined material can be used in magnesium oxychloride cement compositions eliminating the use of magnesium oxide of magnesite origin.

In partially calcined dolomite, the magnesium oxide component would be available for reactions in the formation of oxychloride cement whereas the calcium carbonate portion would act as an inert filler. There would be considerable economy in using this alternative material as dolomite is comparatively a cheap mineral and widely distributed and remains largely unutilized in this country.

It has certain novel features. The method of preparation is simple and does not require any complicated plant and machinery. Partially calcined dolomite based magnesium oxychloride cement compositions conform to Indian standard specifications No. 658—1962 for 'code of practice for Laying Magnesium Oxychloride Cement Compositions'.

The compositions made from this material can be used for making precast flooring tiles, slabs and wood wool boards in the same manner as the magnesite based compositions are used. This material can directly be used without any further processing for gauging with magnesium chloride solution and laying the floor.

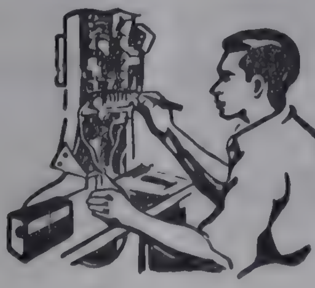
There are a number of firms in the country carrying out business in supplying magnesium oxychloride cement compositions for flooring of railway carriages, for heavy duty floors in various commercial and industrial organisations and for use in making wood wool building boards. It is expected that partially calcined dolomite based compositions would be used likewise.

All the laboratory work has been completed. Large scale trials have successfully been completed in a 2½ tonne capacity kiln. A few compositions based on this material have been used in laying floors in two railway coaches which are on track for service trials. The reports so far are satisfactory. Other compositions have been used in making flooring tiles of quality comparable to those of portland cement tiles.

There is no particular operational layout. Dolomite is first broken into the size of 5 - 7 cm. and mixed with required proportion of coal. The mixture is fed into a semi-continuous vertical kiln for partial calcination of dolomite. The design and operation of the kiln consitute the know-how of this process and would be made available to the interested parties.

The main raw materials required for the production of partially calcined dolomite are dolomitic limestones which are available indigenously.

Parties interested in undertaking the commercial exploitation of the 'Know-how' may correspond with the Secretary, National Research Development Corporation of India, 61, Ring Road, Lajpat Nagar III, New Delhi-24. Other technical details can be obtained from the Director, Central Building Research Institute, Roorkee (UP).



EXPORT OF PRINCIPAL ITEMS FROM INDIA

(Rs. in million)

Commodities	1971-72	1972-73	April — December 1972-73	April — December 1973-74
Agricultural and allied products	**3404**	**4036**	**2863**	**4365**
Vegetable Oils (non-essential)	76	246	147	246
Oilcakes	401	748	410	1203
Tobacco unmanufactured	422	611	503	510
Spices	362	291	177	302
Raw cotton	163	216	205	192
Sugar (excl. molasses)	302	133	98	218
Cashew kernels	613	688	565	630
Fish	420	544	405	602
Plantations	**1784**	**1802**	**1428**	**1534**
Tea and mate	1563	1473	1201	1155
Coffee	220	329	227	379
Ores, minerals and scraps	**1416**	**1492**	**1113**	**1179**
Iron ore	1047	1098	801	890
Mica	154	166	142	93
Textile fabrics & manufactures (excluding coir & jute)	**1515**	**2037**	**1477**	**2390**
Cotton piecegoods (millmade)	666	844	598	1117
Fabrics of art silk and synthetic fibre & spun glass, (millmade)	74	95	40	82
Handloom fabrics of all kinds	138	209	146	258
Cotton apparel	140	298	188	377
Manufactures of coir & jute	**2787**	**2643**	**2038**	**1948**
Coir yarn & manufactures	134	143	107	110
Jute manufactures	2653	2500	1931	1838
Leather & leather Mfrs. and raw Hides & Skins,	**1034**	**1880**	**1245**	**1325**
Footwear made of leather and canvas	116	126	90	84
Leather and leather manufactures excl. footwear	907	1745	1147	1229
Engineering goods	**1223**	**1387**	**1035**	**1217**
Metal manufactures	323	383	295	300
Machinery other than electric	242	293	215	290
Electrical machinery apparatus and appliances	187	234	181	183
Transport equipment	309	315	208	225
Handicrafts	**817**	**1197**	**859**	**1068**
Handmade carpets & druggets	123	196	141	183
Pearls, precious and semi-precious stones	515	779	543	654
Other manufactures	**1016**	**1363**	**607**	**734**
Iron & steel	255	231	154	206
Mineral fuels, lubricants and related materials (incl. coal and coke)	116	319	100	81
Chemicals and allied products	304	353	262	291
Wood, lumber and cork manufactures	81	108	92	156
Grand Total of Exports Incl. Re-Exports	**16082***	**19609***	**13910**	**16917**

*Includes adjustments for the incomplete recording of export to Bangladesh by Govt. agencies in the initial stages of the trade.

Source : Director General of Commercial Intelligence and Statistics Calcutta.

BICYCLE INDUSTRY

The bicycle industry in India has indeed carved a place for itself in the engineering sector of Indian economy because of its capability to increase production turnover as also for earning increased foreign exchange from year to year. Ranking fifth in the world in production of bicycles, the industry is included in the priority Sector. Today, it has in its infrastructure 13 units engaged in the manufacture of complete bicycles and 40 units manufacturing accessories and parts. During 1972, the number of units producing complete bicycles was 11 and ancillary units 37. Viewed against the background of the present energy crisis which is a universal phenomenon, Indian bicycle industry's prospects of increasing production to cater to the growing home demand as well as the requirements overseas are very bright. Consequent upon the rise in crude and petroleum prices, the pattern of demand is also gradually shifting from lower and middle income group to higher income group users all over the world. Thus, the Indian bicycle industry has to play an important role not only from the viewpoint of its growth but also for improving its exports sharply.

During 1973, India's total production of complete bicycles was of the order of 2.5 million numbers which was about 11 per cent more than that in the preceding year at 2.27 million numbers. The production, in fact rose to this level from only 37,000 numbers in 1947, 1.93 million numbers in 1969 and 2 million numbers in 1970. In the area of ancillaries and parts, the production in terms of value was Rs. 150 million in 1973 as against Rs. 142 million in the preceding year. A comprehensive range of accessories and parts like bicycle chains, freewheels, hubs, spokes and nipples, bicycle rims, mudguards, saddles and chain wheels are manufactured by the industry.

The licensed capacity for complete bicycles is placed at 3.63 million numbers per annum. Of this, capacity to the extent of 3.65 million numbers has been approved and further capacity to the tune of 2 million numbers per annum is likely to be approved shortly by the Indian Government. Only recently, a letter of intent was issued for the manufacture of complete bicycles to a unit to the extent of 120,000 numbers with 50 per cent export obligation.

The capacity and production target for the Fourth Five Year Plan was set as 3.60 million numbers and 3.20 million numbers respectively while the estimated demand for 1973-74 was assessed at 3.20 million numbers. The bicycle industry is open for licensing for establishment of new units and there exists a sizeable scope for expansion of the units already on the stream as per the liberalised industrial licensing policy announced by the Indian Government in February 1970. Foreign collaboration and investment, however, are not allowed excepting for the manufacture of special bicycle components, such as, multispeed hubs with trigger control and coaster brakes for which indigenous capacity has not been developed so far. Imports of complete bicycles, parts and accessories have been banned completely. But certain special accessories and parts are allowed to be imported to registered exporters. These items include multi-speed hubs, coaster brakes, endrick rims and calliper brakes.

A sizeable number of items of raw material for bicycle manufacture are available indigenously, such as, cold and hot rolled steel strips and sheets, free cutting bars, ERW and CRW tubes, M. S. spoke wire, M. S. wirerods and bars and limited quantity of zinc. However, cold rolled steel strips/sheets (partial), primary nickel, copper, zinc, lead and free cutting bars (partial) are required to be imported.

Bicycle being typically a steel base product, there is hardly any scope for import substitution except in the form of reducing imports of nickel, copper and zinc. Already, nickel consumption has been reduced to the barest minimum of 52 kg. per 1000 bicycles by restricting nickel plating only to such parts which are subjected to abrasion, wear and tear and heavy weathering action. The efforts for substituting brass with HD PVC for the manufacture of spoke nipples and tube valves are underway. With the availability of indigenous steel raw materials in adequate quantity, the volume of import substitution is expected to go up sizeably.

There has been an encouraging uptrend in India's export of bicycles and parts. The number of complete bicycles supplied during 1972-73 was 211,580 numbers as compared to 142,620 numbers in 1971-72. The exports in the respective years brought in foreign exchange at Rs. 25.80 million and Rs. 18.40 million.

If the total exports of bicycles and parts are taken into account, the untrend in Indian supplies would become more obvious. During 1972-73, the total exports amounted to Rs. 105.50 million as against Rs. 80.40 million in 1971-72, Rs. 69 million in 1970-71, Rs. 47 million in 1969-70 and Rs. 38.20 million in 1968-69.

During 1972-73, there was a boost in the demand for special model sports light Roadster bicycles fitted with 3-speed hubs in the UK market. The orders secured from USA were in the neighbourhood of 240,000 racing models. Hero, Avon, Atlas, Raleigh, Hercules, Greyhound, Philips, RMI, Matchless, Super and Marshall are the specific bicycle makes that are being exported from India. The major exporters of bicycles are M/s. Atlas Bicycle Industries, Sonepat, M/s. Avon Cycles Private Limited, Ludhiana, M/s. Hind Cycles Limited, Bombay, M/s. Hero Cycles Private Limited, Ludhiana, M/s. Matchless Industries of India, M/s. Popular Cycle Manufacturing Co. Ltd., Agra, M/s. Roadmaster Industries of India Pvt. Limited, Rajpura, M/s. Sen and Pandit Private Limited, Calcutta and M/s. T. I. Cycles Limited, Madras.

During the first three quarters of 1973-74 (April-December 1973), the exports earned Rs. 88.80 million. Of this, complete bicycles accounted for about Rs. 18 million and parts and accessories netted Rs. 70.80. million. Iran, Nigeria, USA and Indonesia were the leading buyers of complete bicycles while Nigeria Malaysia, Malavi, Thailand, Tanzania, Bangladesh, Italy, Singapore and USA were the principal importers of parts and accessories.

The increase in exports of Indian bicycles is a reflection of the consistent improvement in their quality to suit the customer preferences abroad. Apart from West Asian and African markets where the Indian bicycles have already established a strong foothold, these have also made a firm entry into the sophisticated markets like USA, UK, Canada, and some of the West European markets.

Bicycle manufacturing technology in India has now reached a stage of offering know-how overseas by way of technical collaboration agreements with foreign countries. For instance, recently M/s. Atlas Cycles Industries Ltd., Sonepat, Haryana, one of the leading manufacturers and exporters of bicycles in India concluded a technical collaboration agreement with M/s. National Development Corporation (NDC) of Tanzania for the manufacture of bicycles in that country. The agreement provides for the supply of Indian know-how to NDC's subsidiary bicycle company for the manufacture of complete components of Roadster type of 'Eastern Star' bicycles. The plant to come up with Indian technical know-how, will have an annual capacity of manufacturing 60,000 bicycles every year. The plant is expected to go up on production stream by mid-1974. This is, in fact, the second time that M/s. Atlas Cycle Industries are lending technical know-how abroad. Earlier, the firm supplied know-how to a leading motorcycle manufacturing firm in Iran for the manufacture of 60,000 bicycles annually. ☐

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INDIAN EXHIBITION IN VENEZUELA

The first ever wholly Indian Industrial Exhibition held at Caracas (Venezuela) from March 26 to April 14, 1974 proved to be a great success. Organised by the Indian Council of Trade Fairs and Exhibitions (Jhansi Castle, Cooperage Road, Bombay 1), the exhibition resulted in the finalisation of on the spot orders worth Rs. 5.4 million (roughly four times the existing annual trade volume between India and Venezuela). Additionally, business amounting to Rs. 1.4 million is reported to be under negotiation. Further over 100 trade enquiries were received for a wide range of engineering and other non-traditional manufactures.

Among the orders that were finalised, Rs. 2.5 million worth were for the supply of Indian lathes, workshop machinery, power presses and cutting machines. Sales of over Rs. 1 million were of control cables for mopeds, cycles and scooters. Carpets were sold at Rs. 1.5 million, while handicrafts and costume jewellery netted about Rs. 0.2 million. Garments also figured among the other items for which business was finalised. Business under negotiation was, among others for the sale of Rs. 1 million worth of lathes, workshop machinery, power presses and cutting machines. Ceramics and refractories, handicrafts and costume jewellery and auto parts were the other items under negotiation. The trade enquiries received were for items, such as, textile machinery, metallising machinery, power presses, mining equipment, electronic components, auto parts. diesel engines, bicycles and spare parts, fire extinguishers, motor cycles, batteries, cables, knitting machines, dental and medical equipment, agricultural sprayers, pumps, chemicals and pharmaceuticals, plastic moulding equipment, carpets and rugs, textile fabrics and readymade garments, costume jewellery and toys.

An important outcome of the Exhibition was the interest aroused among Venezuelan importers to secure agencies for Indian products. Three such agreements were signed for mining equipment, exploders and detonators and costume jewellery and readymade garments for ladies. Another agreement for carpets with possibility of orders worth U. S. $ 0.5 million annually is reported to be under negotiation.

About 100 Indian firms participated in the Fair. They represented a wide range of manufacturing activities—engineering, chemicals and allied products, textiles, readymade garments, coir and carpets. fasion accessories, handicrafts and food products.

INDIAN TRACTORS TO AFGHANISTAN

India's export trade in agricultural implements and machinery including tractors, though modest in performance, has been on the rise. These exports improved to Rs. 6 million during 1972-73 as against Rs. 3.6 million. This uptrend was more prominent in 1973-74 when even during the first three quarters of the year the overseas supply fetched Rs. 7.32 million in foreign exchange as compared to Rs. 4.86 million in the corresponding period of the preceding year.

The principal product lines exported relate to tractors and other appliances for preparing and cultivating soil as also machinery for harvesting, threshing and sorting purposes and a variety of machinery .parts. The major importing countries during 1972-73 were Sri Lanka, Iran, Zambia and Nigeria. For soil preparation and cultivation appliances, Nepal constituted the leading market for harvesting and threshing machinery, while Nepal and Bangladesh were prominent markets for tractors and trailer combinations

Adding to the export effort in the line M/s. Escorts India Ltd., Faridabad, have recently won a global tender in the face of stiff International competition for supply of 400 Ford tractors to Afghanistan. Valued at Rs. 20 million, the order is to be executed by the end of this year.

Besides tractors, trailers and agricultural implements, the production profile of Escorts includes 'Rajdoot' motor cycles, pistons, X ray equipment, shock-absorbers for railways and automobiles, railway centre buffer couplers and heating elements.

In order to improve its exports on a long term basis, the firm is also reported to be setting up a joint venture in Santa Cruz area of Bombay for manufacture of electronic X-ray equipment in collaboration with a French Company. Involving an outlay of Rs. 25 million, the unit is expected to go on production stream by the end of 1975.

Despite production constraints, the firm was able to maintain its total sales at Rs. 220 million in 1973 as in the previous year. This was made possible by the introduction of better production system and by maintaining optimum productivity.

The agricultural tractor industry in India has a licensed/registered capacity of the order of 147,000 tractors per year. Installed capacity is around 60,000 numbers. Actual production was 18,300 numbers in 1972 as against 10,530 numbers in 1967. The tractor industry is listed under priority sector in India.

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SUCCESS OF AN EXPORT HOUSE

In the context of India's exports, recent export success of M/s. Tata Exports Ltd. (Shivsagar Estate, Annie Besant Road, Worli, Bombay) deserves special mention. The firm, to quote one instance, has recently secured the largest single contract so far won by India for the design and supply of galvanised transmission line towers to the National Power Corporation, Philippines. Valued at Rs. 70 million, the contract has been won in the face of stiff International competition and is reported to be the largest order obtained by India against projects financed by the Asian Development Bank.

Under the contract, the Indian firm is to supply complete 138 KV three phase transmission line for the Mindanao Power Project line to be erected for a distance of 750 kms in Mindanao, Southern Island in the Philippines. Tata Exports are arranging for the design of the towers in collaboration with the Tata Iron and Steel Co., and fabrication through EMC Steelal Ltd., Calcutta. The supplies of required accessories is being arranged through a number of other Indian manufacturers. The supplies against the order are to be completed within a year and a half.

In addition to supply of towers, the Indian firm will also provide the technical know-how and site supervision for the construction, installation and commissioning of the line. In fact, Philippine engineers will also be trained in India in the various skilled operations connected with the execution of the project.

Another recent achievement of the Bombay firm pertains to bagging an order valued at about Rs. 12 million for over 150 trucks, bus chassis and accessories to the Ministry of Housing in Cairo (ARE). The order is significant as it is reported to be the first order from A.R.E. in convertible currency. The deliveries against the order, expected to be completed within four months, have already commenced. With the execution of this contract the total number of Tata Vehicles operating in A.R.E. is estimated to total 2,400 numbers.

Among other orders secured lately by Tata Exports, mention may be made of the one relating to supply of 300 concrete mixers and spare parts (worth Rs. 5.3 million) to Iraq and yet another from the same country for supply of 62 Tata vehicles In addition to 90 vehicles already sold to that country. The firm has also concluded contracts with Uganda and Bahrein Islands for supply of buses to these countries. Mauritius has also placed an order with it for bus chasis valued at £ 33,550.

Creditably, for the first time in India, the steel and industrial products division of Tata Exports has secured an order of 1,400 tonnes of cast iron ingot moulds, valued at Rs. 3 million from the USA. Additionally this Division has secured orders from Japan for 45,000 tonnes of chrome ore and 15,000 tonnes of chrome ore chips, valued at Rs. 19.30 million.

The firm has also recently made a headyway in exports of cosmetics and toiletries. For the first time, it has secured a contract for Lakme brand cosmetics (worth about Rs. 0.50 million) from Hungary. It has also made an entry into the Zambian market with the introduction of TOMCO's sandalwood soap.

The Projects Division of the firm too has not lagged behind in this context. In association with another Indian firm, M/s. Sayaji of Baroda, it has undertaken to supply equipment as well as management and technical services at a value of Rs. 10 million for the stone quarry project to be set up in Nigeria. In fact, the Project Division has already completed on the spot study and report for this project.

INDIA'S MACHINE AND HAND TOOLS POPULAR ABROAD

Enjoying growing reputation as a competent supplier of a wide range of hand and machine tools to world markets, the Indian tool industry has recorded appreciable improvement in its export drive in recent years. The export value of these tools attained a level of Rs. 74.50 million in 1972-73 as compared to Rs. 59 million in 1971-72, Rs. 49 million in 1970-71 and only Rs. 26 million in 1969-70.

In the first three quarters of 1973-74 (April-December, 1973), these export supplies were valued at

Rs. 58.50 million. During the period, spanners constituted the major export item with a foreign exchange earning of Rs. 14.24 million. Poland U. K, Czechoslovakia, Greece, Federal Republic of Germany and Thailand were the major buyers in the order of their intake. Files and rasps which fetched about Rs. 8.90 million constituted the next best variety of export earning. Federal Republic of Germany topped the list of buyers, followed by U.S.A., New Zealand, U.K., Indonesia, Thailand, Australia, Belgium and Canada. Wrenches with an earning of about Rs. 8.40 million was another area of export growth. U.S.A., Iran, Greece, Malaysia, U. K. and Thailand were among the important buyers.

The export range in the group also included pliers, pincers, rock drilling or core drilling bits, hacksaw and handsaw blades, metal working handtools, blow lamps, metal working handtools, wood working handtools, interchangeable tools for metal working and wood working dies, lathe tools and tool bits, milling cutters, press tools, and interchangeable tools for machine tools.

In addition to the above, tungsten carbide tipped tools, tungsten carbide tips and other tool tips were active in export trade. Their export earning during April-December 1973 amounted to Rs. 6 million. Tungsten carbide tipped tools were supplied to Japan, Hong Kong and Kenya. Sweden and Japan were the two major buyers for tungsten carbide tips while other tool tips were exported mainly to U.S.A., Netherlands and Japan.

Contributing to the export effort in the line, M/s. Sandvik Asia Ltd., Air India Bldg., Nariman Point, Bombay, whose production profile covers tungsten carbide products improved their total exports to about Rs. 4.70 million in 1973 as against nearly Rs. 3.40 million in 1972. Total gross sales of the company also improved during 1973 to Rs. 78 million from Rs. 64 million in the preceding year, registering an increase of 22 per cent.

Alongside improvement in its exports, the company also registered higher production in the year in relation to tungsten carbide products, brazed tools and steel drills. During the year, it manufactured 77 tonnes of tungsten carbide products (against an installed capacity of 84 tonnes); 0.5 million brazed tools 32,000, sandvik coromant tools, milling cutters, and 130,000 integral rock drill steels. It also produced about 190,000 cubic metres of hydrogen gas. The company's plant is located on the Bombay-Poona Road.

EXPORT PERFORMANCE AND POTENTIAL

IRAN AND INDIA AS TRADING PARTNERS

Iran has now become a prominent market for Indian manufactured goods specially in the engineering and chemical fields. India's exports to Iran during 1961-66 averaged Rs. 53 million per annum and began to rise from 1967-68. They were of the order of Rs. 230 million during the five year period ending 1972-73. Iran has been purchasing Indian tea consistently since 1951, average value of these exports being of the order of Rs. 40 million per annum. Jute goods and spices have also been consistently on the Iranian shopping list from India. It is, however, in respect of manufactured goods that Indian exports have developed most during the last five years. Major areas of such manufactures exported to Iran are iron and steel, non-ferrous metal products, machinery, transport equipment, paper, glass and glass-ware.

The following table indicates the trend during the last few years :

(Rs. million)

Year	India's exports to Iran	India's imports from Iran	Trade balance in favour of India
1967-68	142	329	(—) 187
1968-69	215	864	(—) 649
1969-70	240	834	(—) 594
1970-71	267	916	(—) 649
1971-72	198	1264	(—) 1066
1972-73	248	1215	(—) 967
1973-74 (Jan.-Dec.)	254	1454	(—) 1200

India's share in Iran's imports during 1972-73 was about 1.4 per cent. The major items exported from India were jute goods (Rs. 72 million), tea (Rs. 37 million), non-ferrous metals, mainly copper and aluminium (Rs. 33 million), metal manufactures (Rs. 24 million), transport equipment (Rs. 18 million), machinery (Rs. 13 million) and iron and steel (Rs. 17 million). Exports of non-ferrous metals and iron and steel in the past were much higher but have declined in the recent years mainly due to general shortages all over the world.

During 1973-74 (April-December), the picture seems to even better. India's exports during the period amounted Rs. 254 million higher than the exports during the whole of any year in the past except 1970-71 when they stood at Rs. 267 million. Exports of jute goods during the period (April-December 1973) were valued at Rs. 49 million, almost at the same level as in 1972-73 (Rs. 72 million in the full year). Tea exports during the period under review were better at Rs. 36 million (Rs. 37 million in the full year). It is, however, in the field of engineering products and other manufactured goods that the exports have recorded notable gains. Export of transport equipment during the period improved to Rs. 29 million from Rs. 18 million in the full year of 1972-73. Out of this, railway wagons and components were valued at Rs. 13 million, motor vehicles at Rs. 3 million and bicycles at Rs. 13 million. Iron and steel exports earned Rs. 15 million (Rs. 17 million in full year of 1972-73). Copper and copper manufactures Rs. 13 million (Rs. 24 million), aluminium and aluminium products Rs. 7.5 million (Rs. 6.6 million), metal products Rs. 9 million (Rs. 24 million), machinery, non electric Rs. 10 million (Rs. 5 million), machinery electric Rs. 5 million (Rs. 7 million). Iron ore is a new item for exports to Iran. Its exports during April-December 1973 were valued at Rs. 26 million.

One way of expanding Indo-Iranian trade is to have joint ventures in Iran and India. Two joint ventures for being set up in Iran have been finalised. M/s. Mahindra & Mahindra of Bombay have set up a factory in Iran for manufacture of auto spare parts. Production in this factory started in 1969. M/s. South Indian Automobiles of Madras have started implementation of a project for a modern repair/service workshop in Iran. Even in oil exploration, joint ventures have been in operation. The Govternment of India holds shares in Iranian Marine International Oil Co. which started commercial drilling for oil in 1968.

Negotiations for setting up joint ventures are in progress in some other cases also, namely, by M/s. Gabriel India Ltd. Bombay for manufacture of shock absorbers; M/s. Purolator India Ltd. New Delhi for filters; M/s. Indian Aluminium Cables Ltd. Delhi. for malleable castings; M/s. Nat Steel Equipment P. Ltd. Bombay for sterilizers; M/s. Gold Seal Engineering Co. Pvt. Ltd., Bombay for car window channels; M/s. Brake India Ltd. Madras for auto spare parts and M/s. H.M.T. Bangalore for machine tools.

Besides participation in joint ventures directly there are good prospects of procuring sub-contracts from developed countries who are setting up big projects in Iran. Similarly, Iran holds interests in the Indian Oil Refinery at Madras.

During the visit of the Prime Minister of India to Iran in May 1974, a number of proposals for cooperation between the two countries in various fields including proposals for joint ventures in India and Iran were discussed. As a result of it, it is expected that the trade between the countries will expand substantially.

India is participating in the International Trade Fair to be held in Tehran from September 17 to 29, 1974. The primary objective in the participation would be to project the image of modern India as an emerging industrial country through display of various types of engineering goods, instruments and appliances, transport equipment, chemicals and allied products, textiles, handicrafts, leather and rubber products.

Iran is now India's fourth largest source of imports (Rs. 1454 million in April-December 1973) coming after only USA, (Rs. 3619 million), UK (Rs. 1796 million) and Japan (Rs. 1699 million). The major items of imports from Iran are crude petroleum, fresh and dry fruit, and sulphur. It has been estimated that India's imports from Iran will rise to Rs. 4620 million per annum by 1978-79 which would be more than double of the level in 1973-74 and about four times the level in 1971-72. Imports of almost all the items presently being imported i.e. crude petroleum and sulphur would increase. Besides, copper, zinc and lead are also expected to be imported in considerable quantities.

INDIA'S EXPORT TRADE IN TRANSPORT EQUIPMENT

In the wide range of manufactured products that are exported from India to the world markets, transport equipment constitute a vital segment. Principally comprising railway wagons, road motor vehicles and bicycles, the transport equipment supplied overseas secured Rs. 315.25 million in foreign exchange during 1972-73. In the first three quarters of 1973–74 (April-December 1973), the equipment netted Rs. 225.23 million as compared to Rs. 207.58 million in the corresponding period of the preceding year.

During April-December 1973, the export of railway vehicles witnessed sizeable uptrend at Rs. 45.38 million as compared to Rs. 28.44 million in the same period of 1972-73 with Yugoslavia (Rs. 15 million), Poland (Rs. 8 million), Iran (Rs. 4.7 million) and Iraq (Rs. 2 million) as the leading importers. Of this, railway wagons fetched Rs. 29.7 million. Parts of railway loco rolling stock were exported to the tune of Rs. 14.5 million and the importers included Iran, Burma and Bangladesh.

The group of roadmotor vehicles brought in foreign exchange worth Rs. 85 million in the first three quarters of 1973-74 as compared to Rs. 97 million in the corresponding period of the year that preceded. In the period under review in 1973, the export of buses was to the level of Rs. 11.85 million. The major importer was Korea Democratic Peoples Republic which bought 54 buses at about Rs. 5 million. The Arab Republic of Egypt, Guyana and Yemen Arab Republic were the other principal buyers. Sri Lanka, Bangladesh and Muscat were among the customers for Indian jeeps and land rover type of vehicles in this period. Assembled lorries and trucks were mainly supplied to Nepal (65 numbers) at Rs 4 million; Nepal and Sri Lanka figured prominently among India's customers for road tractors. In addition to the assembled vehcies, replacement parts and initial equipment including vehicle bodies, chassis and frames were also active in the export market and they secured Rs. 52 million during the period under review. Auto rickshaws, motorcycles, scooters and accessories have also been on the export line, the major customers being from the neighbouring countries, such as, Nepal, Afghanistan, Hong Kong and Sri Lanka. Even U.S.A., imported 375 scooters at a value of about Rs. 1 million in this period.

Bicycles constitute yet another significant area of export dynamism. The bicycle exports during 1972-73 totalled Rs. 31 million. Their export value was close to Rs. 18 million during April-December 1973. Iran was the most important buyar having bought 57,150 bicycles at an export value of Rs. 7.6 million. Next in importance were markets of Nigeria (Rs. 4.6 million), U.S.A. (Rs. 1.7 million) and Indonesia (Rs. 1.5 million).

Apart from the export of fully assembled bicycles, the principal categories of bicycle parts that have been active on the export front are bicycle chains, freewheels, hubs, rims, saddles, spokes, and other parts. The total export effort of the bicycle industry during the first three quarters of 1973-74 amounted to Rs. 88.82 million while during 1972-73 these exports were of the order of Rs. 104 million.

Modest exports of aircraft and parts have also been taking place. Besides, the export of a helicopter to France, aeroplane parts mainly to Iraq fetched Rs. 2.8 million.

Ship bodies and wooden canoes (other than war ships) were also supplied among others to Bangladesh, Bahrein Islands and Qatar. These exports secured foreign exchange worth Rs. 2.3 million.

Interestingly, the export trade in railway vehicles even during the first three quarters of 1973-74 was more at Rs. 45.38 million than the value secured (Rs. 39.6 million) in the entire preceding year of 1972-73.

INDIA BAGS FIRST PRIZE IN ZAMBIA TRADE FAIR

In the Zambia Trade Fair which was held at Ndola (Zambia) from 27th June to 2nd July 1974, the Indian Pavilion was adjudged the best among the foreign exhibiters and awarded the first prize. The foreign countries participating in the event included U. K., Federal German Republic, Rumania, China, Kenya, Ghana and Tanzania.

The Indian Pavilion was spread over an area of 702 square metres. The main objective of Indian participation was to project the image of modern India with its industrial and technological capabilities. Among the commodities exhibited in the Indian pavilion were Tata motor vehicles, jeeps from Mahindra and Mahindra, Kirloskar Pumps, sluice valves, steel gate valves, refuse valves, high pressure cylinder valves, cycles and parts, agricultural implements, chemicals and pharmaceuticals, foam rubber products, kitchen gadgets, such as, pressure cookers, mini geysers, plasticware, builders ware, office requisites, fire extinguishers and toilet goods sent by 35 well known Indian manufacturers.

It may be interesting to mention here that India had also participated in this event held in 1973 and its pavilion was ranked second among the foreign participants.

India's exports to Zambia during the period April-December 1973 were valued at Rs. 23.6 million. Major items of exports were cotton textiles, footwear, silk and artsilk textiles among the traditional exports and railway vehicles, machinery and metal manufactures among the engineering products. Imports from Zambia are mainly copper and zinc.

ALUMINIUM PRODUCTS IN EXPORT TRADE

Although India continues to import aluminium and unwrought alloys, a good range of the aluminium products are offered by the economy for export. The aluminium group earned Rs. 34.55 million during 1972-73 and Rs. 30 million even during the first three quarters of 1973-74 (April-December 1973).

The leading categories of aluminium products that have been active on export front are A.C.S.R. conductors, aluminium bars and rods, foils for teachest lining and other purpose and aluminium plates and sheets. Hard drawn bare aluminium conductors (A.C.S.R.) from India are in sizeable demand in overseas markets particulary Iran, U.S.S.R. and Libya. These conductors were exported to the tune of Rs. 25.36 million during 1972-73 and Rs. 21 million in the first three quarters of 1973-74. In these two period respectively, the Iranian imports amounted to Rs. 3.7 million and Rs. 7.5 million while U.S.S R's purchases were Rs. 15.74 million and Rs. 7.16 million and Libyan imports were worth Rs. 2.7 million and Rs. 4.14 million. Besides these major markets, the conductors are supplied to Sri Lanka, Nigeria, Qatar, Singapore and Zambia.

The Libyan market absorbed 400 tonnes of aluminium bars and rods at Rs. 2 million in the first three quarters of 1973-74 while in 1972-73 Iran was the best buyer (Rs. 3 million).

Aluminium foils for tea-chest lining were exported among others to Nepal, Bangladesh and Canada. In all these, foils secured Rs. 4.2 million during April-December 1973.

Also aluminium wires, bars and clays, tubes, pipes, and blanks as well as fittings for tubes and pipes have been supplied to markets far and near.

FOREIGN EXCHANGE FROM FILMS

Indian feature films were exported nearly to 70 overseas markets during 1973–74. Their export value was as much as Rs. 33 million during the first three quarters of 1973-74 as compared to Rs. 52 million in the full preceding year of 1972-73. In 1973-74, as in the years before, U. K. was the top importer of the feature films (Rs. 5.4 millton) followed by Singapore (Rs. 4.5 million), Indonesia (Rs. 2.75 million), Dubai

(Rs. 2.34 million), Fiji Islands (Rs. 1.5 million), Thailand (Rs. 1.4 million), Afghanistan (Rs. 1.2 million), Sri Lanka (Rs. 1.18 million), Kenya (Rs. 1.17 million) and Mauritius (Rs. 1.13 million). In all 6.68 million metres were supplied overseas during the period under review in 1973-74 as compared to 9.9 million metres during 1972-73.

Advertisement shots and news reels are also being exported, besides feature films. Also, developed cine films were purchased by a wide range of overseas markets.

Popularity of Indian films the world over becomes obvious not only from the consistent uptrend in their export earnings over the years but also a broadbased network of importing community.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

FOCUS ON STEEL STRUCTURALS

Indian industry has over the years acquired manufacturing expertise in the steel structural sector. Light, medium and heavy steel structurals comprising warehouse structurals, steel plant structurals, bridge structurals, penstocks, hydraulic gates and gearings are the areas in which the industry has come to undertake the manufacture on a competitive basis.

In light and medium structurals of mild steel, the country's production during 1972-73 was of the order of 628,000 tonnes while in mild steel, heavy structurals the output in the year totalled 207,000 tonnes.

Classified as a priority industry, steel structurals are considered to have considerable domestic capability in which neither financial nor technical collaboration is required.

Several standard specifications (ISI) for various sections and parts of structurals have been announced by the Indian Government to compare favourably with the International standards.

The structural industry has come to contribute substantially to India's export effort. During 1972-73, their export value was of the order of Rs. 11.25 million. The major destinations are New Zealand. Arab Republic of Egypt, U.S.A., Burma, Iran, Thailand, Iraq and Muscat.

The steel structural industry has been brought under the Quality Control and Pre-shipment Inspection Scheme for export. The specific categories covered under the scheme are structural steel (high tensile, ordinary and fusion welding quality), rivet bars for structural purposes and carbon steel billets for re-rolling into structural steel.

FACTS ON INSTRUMENT INDUSTRY

For a wide variety of instrumentation Indian industry has built adequate base both in terms of manufacture and export trade.

Industrial process control instruments, for instance, are being manufactured by about 9 units with an aunual installed capacity worth Rs. 150 million. Actual production of these instruments during 1973 totalled about Rs. 71 million. Twelve manufacturing units are engaged in the production of scientific and surgical instruments and their annual installed capacity is valued at about Rs. 55 million. Their production in 1973 totalled Rs. 43 million. Medical and surgical instrumeuts constitute another important line of instrumentation in the economy and nine production units succeeded in producing these instruments worth Rs. 24 million in 1973 while their installed capacity is worth Rs. 38 milllion. Installed capacity for electro-medical equipment is of the order of Rs. 45 million and actual production was Rs. 35 million in 1973. Electrical measuring and integrated record instruments are also being produced in sizeable quantity and the value of their production in 1973 was nearly Rs. 4.4 million while their installed capacity is about Rs. 5.6 million.

The scientific medical, optical and measuring, controlling instruments and apparatus are contributing their mite in the country's export endeavour. During 1972-73, their foreign exchange earnings stood at Rs. 33.25 million. Even during the first three quarters of 1973-74 (April-December 1973) their export was worth nearly Rs. 15 million. The major destinations of Indian scientific and surgical instruments are the U.S.S.R, Iran, Nigeria, Malaysia, Sudan, Kenya, Philippines and Iraq.

Classified under priority and core industry, the instruments sector is open for foreign collaboration on a certain basis. Foreign investment is permitted for electro-medical, optical and dental instruments and equipment for medical profession. Technical collaboration is permitted for specialised surgical equipment such as surgical needles.

Over 225 Indian standards specifications have been finalised for a wide variety of instruments being used by the Indian Standards Institution. The production profile of the scientific and surgical instruments in the economy comprises binoculars, microscopes and other optical instruments, surveying instruments, balances, drawing, measuring and calculating instruments, technical models for demonstration, mechanical appliances for testing physical properties of industrial materials, hydro-meters, thermometers, instruments for measuring or controlling the flow, depth, pressure of liquids or gases, instruments for physical and chemical analysis and medical instruments and appliances.

REVIEW OF BALL AND ROLLER BEARINGS INDUSTRY

With seven manufacturers in the line, India's installed capacity of valves and roller bearing was of the order of Rs. 22.6 million during 1973. Actual production in the year was 28 million numbers.

The bearings manufactured in India include ball bearings, cylindrical roller bearings and tapered roller bearings. In view of the consistent uptrend in domestic demand for the bearings, the capacity utilisation has been far more than the installed capacity.

Among the raw materials that are available indigenously for the production of ball and roller bearings are H.C.C. wire rivet wire, H.C.C. bars and grinding wheels. High Carbon high chromium steel wire rods and alloy steel ball bearing wires are being imported.

The ball and roller bearings produced in the country have also been earning notable sums of foreign exchange through their export effort and in 1972-73 their export value was about Rs. 2.13 million. The major destinations were North Korea, Australia, Sri Lanka, Hong Kong, Yugoslavia, Federal Republic of Germany, Netherlands, Canada and Italy.

This industry is classified in the priority list and neither financial nor technical collaboration is considered necessary in view of the fact that sufficient domestic technology already established in the line. Even during the first three quarters of 1973-74 the export effort of ball and roller bearings was worth Rs. 2.33 million. The major variety exported in this period was ball bearings other than adapter bearings not exceeding 50 mm. Korea Republic was the most important destination (Rs. 0.7 million). Forged steel balls were supplied principally to Yugoslavia and U.K. while tapered roller bearings between 50 to 100 mm were imported by Korea Democratic Peoples Republic, Korea Republic, Sri Lanka and France.

The Indian Standards Institution has over the years fixed Indian standards specifications for over 20 varieties of ball and roller bearings keeping in view the international standards.

India however imports quite a few varieties of sophisticated ball and roller bearings and parts. The import bill was of the order of Rs. 107.67 million during 1972-73.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PROCESS FOR DYEING WOOL, HAIR AND OTHER KERATINOUS FIBRES

Large quantities of hair, wool and other kerationous fibres are exported after only an acid wash and cleaning. Their export price is, therefore, rather low (between Rs. 1.74 and Rs. 1.89 kg.). If, however, the above materials are dyed before they are shipped, they would fetch a much higher price as there is a demand in the foreign markets for wool and hair of uniform colour, preferably black.

Recognizing this fact, the Central Leather Research Institute (CLRI), Madras has developed a process for dyeing wool, hair etc. of non-uniform shade into a fast non-bleeding jet black shade.

The CLRI process consists in subjecting the keratinous material to acid washing, scouring, mordanting and dyeing and fat liquoring. The shade developed has good depth, lustre, softess and is fast to light, dry and wet rubbing, to bleeding in hot water, and in hot detergent solution. The samples of the material produced in the laboratory have come up to the standards required and consumers have also reacted favourably.

Tanneries now processing hair/wool can set up the plant for dyeing. The optimum plant capacity is 2 tonnes per day.

Machinery and chemicals required are indigenously available. The additional cost of processing grey or brown hair from the acid washed and secoured condition to the jet black shade is approximately 15-18 paise per kg.

Since there is a good demand for hair/wool of jet black shade in foreign markets, the process will be very useful for tanners.

For further particulars, interested parties may contact The Managing Director, National Research Development Corporation of India, 61, Ring Road, Lajpat Nagar III, New Delhi-24.

BISPHENOL-A

National Chemical Laboratory (NCL), Poona has developed a proccess for the manufacture of Bisphenol-A starting from indigenously available raw materials. Bisphenol-A, is widely used as an intermediate in the manufacture of epoxy resins and polycarbonates which in turn find application in the production of surface coatings, structural plastics and adhesive. Bisphenol-A is also used as an antioxidant.

At present Bisphepol-A is being manufactured by a few firms on a small scale, but indigenous production is reported to be around 300 tonnes per annum as against an estimated demand of 800-1000 tonnes per annum. There is thus scope for establishing additional units for the production of Bisphenol-A in the country.

The NCL process consists of condensing phenol with acetone in presence of suitable catalysts. The process has been standardized on a pilot plant scale of 10 kg. per batch of the finished product. The yield is 85 per cent based on acetone. The product is obtained in a clean white crystalline form and in a state of high purity (melting point 154°-155°), and possess the specifications for the product for use in epoxy resin manufacture. The product has been tested by some firms who have fund it suitable for the manufacture of epoxy resins.

Phenol, acetone, sulphuric acid, other chemicals and catalyst are the main raw materials required for the manufacture of this product. All these are indigenously available.

Reaction kettle (lead-lined or glass lined), washing vessels (MS/AI), centrifuge, dryer, micropulverizer and distillation units are the major items of plant and machinery. All these are either indigenously available or can be fabricated easily in the country.

CHEMICAL INDUSTRY
A REVIEW

With a consistent growth in production as well as in exports, India's chemical industry is rapidly marching towards the goal of self-sufficiency in many of the basic and applied chemical sectors. The industry occupies a key position as a supplier of a comprehensive range of chemicals to a number of end-users. It has to its credit production of new ranges of chemicals every year. Alongside this, new units are also being set up every year which help broaden and diversify the production pattern of the industry. The production range of the industry broadly covers fertilisers, organic and inorganic chemicals, petrochemicals, dyes; intermediates, drugs and pharmaceuticals, insecticides, plastics, industrial gases and industrial explosives and accessories.

In the organised sector, chemical industry's infrastructure comprises a large of number of small, medium and large scale units. Although the industry appeared on India's industrial map only recently, it has achieved significant progress in the production of many of the important chemicals which were being imported in India in bulk quantities. With 1960 as the base year, the index of production of the units in the organised sector registered consistent growth—118.8 in 1961, 166 in 1965, 246.53 in 1969, 261.43 in 1970, 268.50 in 1971 and 300.50 in 1972.

Several areas of manufacture in the Industry registered sizeable improvement in production during the last decade. For instance, production of nitrogenous fertilisers improved from only 0.10 million tonnes in 1960-61 to 1.05 million tonnes in 1973, phosphatic fertilisers from 53,000 tonnes to over 0.32 million tonnes, sulphuric acid from 0.37 million tonnes to 1.43 million tonnes (in terms of 100 per cent concentration), soda ash from 0.15 million tonnes to over 48 million tonnes and caustic soda from 0.10 million tonnes to over 0.40 million tonnes. The industry entered into the manufacture of petrochemicals in 1968 with the establishment of petrochemical complexes.

The recent trend towards greater diversification in the product range is adding a large number of sophisticated chemicals to the industry's production stream. For instance, during 1972 fluoro - carbon refrigerant gases - 21, certain miscellaneous fluorides, electrolytic manganese dixide, phosphamidon, DDVP. sterile desposition transfusion/infusion sets, sulpha methisine and dimethylamiline were some of the sophisticated products that were produced for the first time in the country. Apart from these chemicals, new ranges have been established in respect of such chemical items as hard gelatine capsules, iodo chlorohydroxy quinoline and paracetamol.

Acids and Fertilisers

During 1973, the industry's output of sulphuric acid was of the order of 1.40 million tonnes which registered a moderate increase over that of the preceding year at 1.30 million tonnes. Taking into account the installed capacity in the line at 2.10 million tonnes of 68 units in the line, the capacity utilisation was about 67 per cent. The industry's endeavour to achieve sulphur substitution in the process for manufacture of sulphuric acid has yielded desired results - the manufacture of the acid is now based on pyrites instead of elementary sulphur. Already nearly 22,000 tonnes and 24,000 tonnes of sulphuric acid are annually produced by M/s. Cominco Binani Limited and M/s. Hindustan Zinc Limited from zinc smelter gases. M/s. Indian Copper Corporation, Ghatshila and M/s. Hindustan Copper Limited, Khetri are likely to go on production stream in 1974 based on copper smelter gases. The indigenous manufacture of the acid with zinc/copper smelter gases is expected to save sizeable foreign exchange every year.

Besides sulphuric acid, the industry produced 90,000 tonnes of hydrochloric acid (installed capacity 0.13 million tonnes of 26 units); 21,000 tonnes of nitric acid (19,751 tonnes of 10 units); 14,000 tonnes of chlorosulphonic acid (20,800 tonnes of 3 units); 22,000 tonnes of phosphoric acid (13,000 tonnes of 3 units) and over 0.12 million tonnes of alumina ferric (0.15 million tonnes of 14 units). Substantial progress was achieved in the manufacture of single super-phosphate also. During 1972, its production was of the order of 0.79 million tonnes. The industry also produced a number of other important chemical items catering to the group of acid and fertilisers during 1973. These include aluminium sulphate (production 4,000 tonnes, installed capacity 14,210 tonnes and number of units 8) sodium sulphate (50,000 tonnes, 48,815 tonnes and 13 units), ferrous sulphate (6,000 tonnes, 6,700 tonnes and 4 units), magnesium sulphate (2,500 tonnes, 5040 tonnes and 8 units), bichromates (9,000 tonnes, 10,240 tonnes and 4 units), ammonium nitrate (explosive grade) (17,000 tonnes, 6342 tonnes and 1 unit). Production of sodium nitrate was undertaken for the first time in the country in 1972 by M/s. Fertilisers Corporation of India Limited during 1973. One more unit, M/s. Deepak Nitrate entered into production of these items on commercial scale. The installed capacity in respect of sodium nitrite is 1,200 tonnes (1973) while the production during the year was 2,750 tonnes. The capacity in the area of sodium nitrate is 3700 tonnes and the production in the year was 2,500 tonnes. The production of both, yellow and white phosphorous also improved considerably. For instance, during 1973, yellow phosphorous production was 2,000 tonnes while that of white phosphorus was 1942 tonnes (1972).

Nitrogenous and phosphatic fertilisers (P_2O_5) production during 1973 was 1.05 million tonnes and 0.32 million tonnes respectively. In the preceding year, the production was 1.12 million tonnes and 0.37 million tonnes respectively. Output went up to these levels from 0.89 million tonnes and 0.26 million tonnes respectively in 1971. Additional capacity is being created as a part of endeavour to meet the growing home demand.

During 1973-74, the fertiliser plant at Goa went on production stream. The installed capacity of the plant in terms of nitrogen and P_2O_5 is of the order of 170,000 tonnes and 42,000 tonnes, respectively. Two more public sector plants at Durgapur and Cochin are also under commissioning. With the commissioning of these three units, the total installed capacity which stood at 1.46 million tonnes in 1972-73 would go up to 1.94 tonnes of nitrogen and 0.50 million tonnes of P_2O_5. During 1973-74, the overall production of nitrogen has been estimated at 1.05 million tonnes, marginally less than that in the preceding year, owing to various constraints at the production level.

The fifth plan envisages a production target of 4 million tonnes of nitrogen by 1978-79. To this end, a million capacity of about 6 million tonnes of nitrogen would have to be developed by the terminal year of the Fifth Plan. With the implementation of the schemes which are either under consideration or which have been approved for implementation, the total capacity would be 4.16 million tonnes of Nitrogen and 1.23 millton tonnes of P_2O_5. Additionally, five more public sector projects have been approved by the Indian Government. The three inland fertiliser plants would have a capacity of 900 tonnes of Ammonia per day each. These would be set up and operated by a new public sector company. The Fertiliser Corporation of India would implement setting up of 2 coastral plants at Paradeep and Trombay.

Alkali Chemicals

Alkalies constitute an important area of the chemical industry. In this group, basic chemicals, such as, soda ash, caustic soda, calcium carbide and liquid chlorine come under core sector while other chemicals fall under priorty sectors. Basic chemicals are widely used as the raw materials in the manufacture of a wide range of consumer goods, such as, soaps, textiles, pulp and paper, rayon, aluminium and other non-ferrous metals, petroleum, refining, drugs and pharmaceuticals and food processing.

During 1973, in the core sector, the installed capacity of 0.44 million tonnes of caustic soda was spread over 29 units and their combined production (in terms of 100 per cent concentration) was over 0.40 million tonnes. In the preceding year, the same number of units with an installed capacity of 0.43 million tonnes produced 0.39 million tonnes. Caustic soda is produced through 3 different processes, namely, electrolytic mercury amalgam process, electrolytic mercury diaphram process and chemical process (lime/soda). It is manufactured in 3 varieties - lye, fused and solid and flake. A new caustic soda unit with a capacity of 33,000 tonnes per annum was set up by a ryon unit for captive use. With some modrate expansion schems of the existing units and establishment of a new unit enabled to step up the installed capacity from 0.43 million tonnes in 1972 to 0.44 million tonnes in the following year. The estimated demand for the chemical by the Fifth Five Year Plan has been assessed at 0.79 million tonnes (including for export) and therefore, establishment of new units and expansion of the existing ones has been planned.

During 1973, there were 4 units engaged in the production of soda ash with the installed capacity of over 0.50 million tonnes. In the year, the production was 0.47 million tonnes. In the last year, the installed capacity of the same number of units was of the order of 0.47 million tonnes and the production at over 0.48

million tonnes. Many of the industries such as, glass, bangles, bichromates, and sodium silicate make use of heavy or dense variety of soda ash. Therefore, a part of the output of soda ash is converted into dense variety by compression process and granulated into larger particle size. In addition to the 4 units, additional capacity of 0.24 million tonnes has been estimated through 3 expansion schemes and 8 new schemes have been approved by the Government for a total capacity of 0.51 million tonnes per annum. Of the schemes approved so far, a capacity of 0.24 million tonnes of soda ash per annum is likely to be implemented during 1975-76.

Liquid chlorine is one more significant line of production in the alkali group chemicals having an installed capacity of 0.27 million tonnes. During 1973, 22 units engaged in the line produced 0.15 million tonnes. In 1972, the same number of units with an installed capacity of 0.22 million tonnes produced over 0.14 million tonnes.

Stable bleaching powder, sodium hydrosulphide, sodium sulphoxylate, sodium bicarbonate, ammonium bicarbonate, caustic potash, potassium carbonate, calcium carbide, aluminium chloride are some of the other important chemicals produced by the chemical industry in the group of alkali chemicals.

Allied Chemicals

Besides alkali chemicals, in the field of allied chemicals calcium carbonate (precipitated and activated), hydrogen peroxide, bromine, cryolite and aluminium fluoride, boric acid and flouro carbon gas are some of the chemicals for which an additional capacity is being created. During 1972, a number of miscellaneous inorganic fluorides were taken up for production for the first time and their imports were banned. However, additional production of certain miscellaneous fluorides, specially required by the Atomic Energy Commission is proposed to be developed in the country.

In the area of organic heavy chemicals, a large number of items registered significant increase during 1973. Among these are included acetone (19,564 tonnes in 1973 against 16,684 tonnes in 1972); Benzene (70,035 K. L. against 69,103 K. L.); butyl acetate (3670 tonnes against 3097 tonnes); Butyl alcohol (6584 tonnes against 6474 tonnes); diacetone alcohol (3714 tonnes against 3634 tonnes); diethylene glycol (818 tonnes against 675 tonnes); dripolene A and B (5566 tonnes against 5396 tonnes); ethylene (73,821 tonnes against 64,976 tonnes); ethylene oxide (10,713 tonnes against 7397 tonnes); monoethylene glycol (8383 tonnes against 6223 tonnes); 2-ethyl hexanol (7916 tonnes against 7484 tonnes); methanol (23,265 tonnes against 23,141 tonnes); methyl isobutyl keytone (1344 tonnes against 1229 tonnes); phenol (13,072 tonnes against 7561 tonnes); polyethylene glycol (780 tonnes against 606 tonnes); propylene (39,207 tonnes against 35,145 tonnes); styrene (15,052 tonnes against 12,111 tonnes) and toluene (14,439 tonnes against 11,821 tonnes).

In the organic chemical sector, production of synthetic rubber suffered setback during 1973 as compared to that in 1972. It declined to 20,866 tonnes (1973) as compared to 27,653 tonnes (1972) owing to non-availability of indigenous ethyl alcohol.

Drugs and Pharmaceuticals

In the group of drugs and pharmaceuticals an overall increase in production was recorded in most of the essential drugs during 1973. The major increase was recorded over the preceding year's production in respect of Antibiotics like penicillin, tetracycline, chloramphenicol and erythromycin base; anti-dysentery drugs; anti-diabetic drugs and insulin; anti-leprosy drug-D.D.S; anti-pyretics/analgesics like phenacetin and analgin anti-T.B. drugs, such as, I.N.H, P.A.S and its salts and thiacetazone; alkaloids and phytochemicals like caffeine, emetine HCL, Strychnine and brucine, sulfa drugs and vitamins–vitamin C, Nicotinic acid/ Amide, vitamin B_1 and folic acid.

Industrial licences for the manufacture of erythromycin and its salts, xanthinol, nicotinate, pipazathate HCL, nikethamide; PAS and its salts, INH clofibrate and other cardio vascular drus were granted to various parties during the year.

Chemicals used in the manufacture of plastic products also recorded a sizeable increase during 1973.

In the thermostate sector, MF moulding powder production improved from 140 tonnes in 1972 to 198 tonnes in 1973. The installed capacity during both the years remained constant at 250 tonnes and there were two units engaged in the production. P.F moulding powder was being manufactured by 3 units during 1973 with an installed capacity of 5800 tonnes. The production during the year was estimated at 4952 tonnes as compared to 4405 tonnes in 1972. The production of UF moulding powder and CA moulding powder during 1973 was estimated at 1977 tonnes and 1567 tonnes against 1837 tonnes and 1358 tonnes respectively in 1972. The installed capacity in these lines of manufacture was placed at 2280 tonnes and 7200 tonnes during 1973 respectively. In the area of thermoplastics, production rose to 28,127 tonnes in 1973 from 27,941 tonnes in 1972 in respect of polyethylene L.D., 23,000 tonnes from 19,100 tonnes in polyethylene H.D., 13,759 tonnes from 13,400 tonnes in polystyrene and to 48,650 tonnes from 46,235 tonnes in PVC resin.

Dyestuffs, despite their emergence on Indian Industrial scene only recently, have come to occupy a significant position in chemical industry owing to its capability to cater to requirements of a number of sectors of the industry. Naphthol and vat dyes are the two most important items in the comprehensive range of dyestuffs produced by the industry. During 1973, the production of naphthol at 1236 tonnes was more or less the same as in 1972. In both these years, there were 5 units engaged in production with a combined installed capacity of 1285 tonnes. A similar trend was noticed in the production of vat days also. During both the years, the number of units engaged in the line was 5 with the installed capacity of 1441 tonnes and the estimated production during 1973 at 1247 tonnes was more or less the same as in the preceding year.

In the manufacture of pesticides (technical grade), quite a few items registered significant inerease during 1973. Among these were : BHC 20,156 tonnes (17,210 tonnes in 1972); copper oxychloride 1,210 tonnes (957 tonnes); DDT 3832 tonnes (3739 tonnes); zinc phosphide 141 tonnes (57 tonnes); organo mercurials 84 tonnes (76 tonnes); thiuram 140 tonnes (118 tonnes); diemethoate 397 tonnes (231 tonnes); metasystox 79 tonnes (49 tonnes); fenitrothion 88 tonnes (42 tonnes); phosphamidon 460 tonnes (220 tonnes); DDVP 72 tonnes (3 tonnes) and total technical pesticides 30,667 tonnes (26,879 tonnes). Zinc phosphide, 2-4 D, ethylene dibromide, nickel chloride, aluminium phosphide, retafin, and malathion were the specific chemical items in the pesticide sector whose output suffered heavily during 1973.

In the year under review, production of soaps declined considerably. The production was 235,000 tonnes (1973) as against 271,914 tonnes (1972). Despite the decline, the production, however, outstripped the installed capacity which was set at 218,880 tonnes during the year. The industry is facing acute shortage of oils repuired in soap production. In detergent sector, the production has gone up to 70,000 tonnes during 1973 from 62,030 tonnes in 1972. During 1973 there were 46 units engaged in the production of soaps and 5 units in synthetic detergent manufacture. The demand for synthetic detergents by the end of 1978-79 has been estimated at 0.30 million tonnes which would need an installed capacity of 0.35 million tonnes.

Petrochemicals :

Comparatively a new line of production, petrochemicals and intermediates sector achieved a moderate increase in production during 1973 notwithstanding various constraints at production level. The production of thermoplastics registered 7 per cent increase during 1973 at 114,000 tonnes. Production of thermosets increased by 13 per cent during the year while the increase was as much as 21 per cent in the production of non-cellulosic synthetic fibre. Production of synthetic rubber, however, declined owing to non-availablity of alcohol, the traditional raw material. During the year, the production of other major organic chemicals, such as, aromatic hydrocarbones, intermediates for plastics, glycol, methanol and phenol etc. increased substantially registering 6 to 70 per cent growth. Production of polyester staple fibre and nylon filament yarn registered a marginal increase, despite creation of a new capacity, because of paucity of raw materials at home as well as in the international market.

For the first time production of DMT was undertaken in India by the Aromatic plant of the India

Petrochemicals Corporation in March 1973. DMT is the main raw material for polyester fibre yarn. The Atomatic plant comprises of DMT and Xylenes units. The plant has also commenced production of paraxylene which is a feedstock for the DMT unit. The paraxylene unit was mechanically campleted in 1973. During the first eleven months of 1973-74 (March 1973-February 1974) production of DMT was of the order of 4700 tonnes inclusive of production from imported paraxylene. When the aromatic plant would work at 60 per cent of its capacity in 1974-75, it would produce 14,400 tonnes of DMT. The products of olefins complex and its down stream units being most gaseous cannot be stored. Plastic resins and synthetic rubber are also available from the complex to facilitate smooth production of plastic and rubber units to the best of their capacities. Acrylonitrite, the main raw material for acrilic fibre and detergent alkylate used in the manufacture of synthetic detergent would also be available from this complex. Both these products, namely, acrylic fibre and synthetic detergents have assumed a special significance in view of their import substitution character in so far as wool and animal and vegetable fats are concerned.

During the year, the production of DMT, Orthoxylence, mixed xylene and vinyl chloride was taken up for the first time in India. The installed capacity of 24,000 tonnes was established in the manufacture of DMT by one unit and its production was estimated at 3863 tonnes while a single unit having the capacity of 21,000 tonnes of orthoxylene, produced 3920 tonnes. In the mixed xylene manufacture also, only one unit with an installed capacity of 2500 tonnes was engaged and it produced 874 tonnes. As against the installed capacity of 30,000 tonnes, the production of vinyl chloride by a single unit was as much as 22,321 tonnes.

Chemical products from India including elements and compounds, dyeing and colouring materials, pharmaceuticals and perfumery have been registering uptrend on export front in recent years. During the year 1972-73, these exports earned foreign exchange at a value of Rs. 403.63 million while in the previous year the export earning was only Rs. 354.43 million. The contribution of chemical elements and compounds to the export improvement amounted to Rs. 76.4 million in 1972-73 as compared to Rs. 72 million in the year before. The group of dyeing, tanning and colouring materials contributed Rs. 92.65 million as against Rs. 54.5 million. The export improvement in respect of medicinal and pharmaceutical products was of the order of Rs. 103.2 million as compared to Rs. 96.3 million. The export value of essential oils and perfumed materials rose to over Rs. 100 million as against Rs. 87 million in the comparable year.

In the group of chemical elements and compounds, the export performance of inorganic chemicals is particularly noteworthy. Their exports were valued at Rs. 48 million in 1972-73 as against Rs. 38 million in the year that preceded. The contribution of organic chemicals, however, fell merginally to Rs. 28 million from Rs. 33 million. The major products supplied by India in the organic chemicals group related to benezene (Rs. 1.8 million, mainly to U.K.), butyl alcohol (Rs. 1.82 million to Netherlands), anthraquinone (Rs. 4.7 mainly million to Italy), benzanthrone (Rs. 1.47 million, mainly to the German Federal Republic, Switzerland and U.S.A.), beta ionone (Rs. 8 million worth to U.S.S.R.) and beta hydroxy napthoic acid (Rs 2.7 million, essentialiy to U. S. A.). In the inorganic group hydrochloric, sulphuric and boric acids figure prominently. Of the nearly Rs. 10 million worth of export market for hydrochloric acid, Dubai, Saudi Arabia and Abu Dhabi absorbed the bulk. Abu Dhabi, Bahrein Islands and Dubai are the important customers for sulphuric acid which earned Rs. 1.2 million in 1972-73. Apart from acids, the other inorganic chemical product exports from India include metallic oxide used in paints, metallic salts and peroxy salts. Zinc oxide is prominent line of overseas supply in the oxides group, having secured foreign exchange worth Rs. 9.4 million in 1972-73, Thailand, Congo Peoples Republic, Indonesia, Belgium being the important buyers Bleaching powder, potassium chlorate aluminium sulphate and sodium bicarbonate are the important metallic salts for export in the inorganic chemicals group.

The export trade in pigments, paints and varnishes has also looked up in 1972-73 in which year the export earning was of the order of Rs. 45.6 million as compared to Rs. 28.5 million in the preceding year. Synthetic enamels fetched Rs. 17.8 million in 1972-73, with U.S.S.R., as the leading buyer (Rs. 16 million).

The U.S.S.R. was again the best buyer in varnishes at an import value of Rs. 10 million while the total export earning of varnishes amounted to Rs. 11 million Synthetic organic dyestuffs, natural indigo and colouring lakes constitute another line of export promise. These products fetched foreign exchange worth Rs. 45.22 million in 1972-73 as compared to Rs. 24.8 million in 1971-72. Acid dyes contributed Rs. 3.4 million while basic dyes earned Rs. 4.4 million and direct as well as sulphur dyes fetched Rs. 11.24 million. Exports of lakes, solving dyes and organic pigments amounted to Rs. 8 million while reactive dyes and azoic dyes secured Rs. 6 million. Another variety, namely, vat dyes netted Rs. 8.9 million.

The year 1972-73 witnessed export improvement in medicinal and pharmaceutical products also. Penicillin, streptomycin and other antibiotics contributed Rs. 10.72 million to the export effort. The major customers included U.S.A. (particularly for oxytetra cyclin preparations of which the U.S. market imported worth Rs. 3.9 million), Philippines, Sri Lanka, Hong Kong, Korea Republic and Tanzania Republic. Vaegetable alkaloids, salts and other derivatives have had a Rs. 12 million export market in 1972-73. Principal customers were Czechoslovakia, U.S.S.R., U.S.A., German Federal Republic and Bulgaria.

Medicaments constitute, however, the major group of export trade by the India's pharmaceutical industry. The export value in 1972-72 was of the order of Rs. 70.47 million. Ayurvedic and Unani medicines contributed Rs. 2 million. Proprietory patent medicines, ointments for bronchital infections and homeopathic medicines are among the other medicaments sought abroad.

Essential oils and perfume materials constitute yet another group of chemical exports from India. The total earning of this group was Rs. 40 million in 1972-73. Sandalwood oil is an important line of supply, It earned Rs. 28 million through its exports for 1972-73. More than one-third of the total exports were absorbed by the U.S. market. U.K., U.S.S.R., Japan, France, Switzerland and Netherlands were the other buyers. Apart from Sandalwood oil, essential oils supplied abroad include lemon grass oil, palma rosa oil and vetiver oil.

India-made agarbattis had a Rs. 16 million export market during 1972-73. These incense sticks were supplied to nearly 95 conntries, the more important ones being U.S.A., Dubai, Liberia, Nigeria and Singapore. Besides agarbattis, a variety of perfumery and cosmetics are also prominent in the export line, such as, brilliantines, shaving creams, hair oils, shampoos, talcum powder, perfumes and spiritous toilets.

Soaps, cleansing and polishing preparations also contribute their mite to the country's export endeavour. They have earned foreign exchange worth nearly Rs. 18 million during 1972-73. Synthetic detergents, alone fetched Rs. 9 million of which U.S.S.R., imported worth Rs. 8 million. ☐

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BEL IMPROVE EXPORTS

Alongside consistent progress in production, M/s. Bharat Electronics Ltd. (BEL), Bangalore, in the public sector, have succeeded in improving their exports of electronic components and equipment to Rs. 18.50 million in 1973-74 from Rs. 10 million in the preceding year.

This export performance is significant considering that the firm entered the export field only in 1968-69 with a modest foreign exchange earning of Rs. 0.5 million against supply of electronic components. Creditably, BEL's exports, today, find their way to such sophisticated markets as the USA, UK, Federal Republic of Germany, Canada, Australia and even Switzerland.

During 1973-74, BEL's turnover reached a level of Rs. 487 million achieving a twenty per cent increase over the performance in the preceding year. The production range of the firm includes communication equipment for use by the Defence Forces and other organisations like All India Radio, Metrological Department, Posts and Telegraphs as also components for the entertainment industry. New items introduced recently into its production range include TV transmitter, TV studio equipment and radar for frigates.

Production of electronic industry in India was estimated at Rs. 2,420 million in 1973-74 as against Rs. 2,060 million in 1972-73 and Rs. 1,800 million in 1971-72. Of the total production value in 1973-74, consumer electronics and mass communication products accounted for Rs. 640 million as against Rs. 650 million (1972-73); telecommunication equipment Rs. 630 million against Rs. 490 million; aerospace and defence equipment Rs. 350 million against Rs. 300 million; computer control and instruments Rs. 250 million against Rs. 180 million and components Rs. 550 million against Rs. 440 million.

UPTREND IN DIAMOND EXPORTS

Ranking prominently among the export oriented sectors of Indian economy, the exports of diamond industry in India have witnessed an encouraging uptrend in recent years. During 1972-73, exports of cut and uncut diamond industry totalled Rs. 625.25 million, accounting for about 80 per cent of the entire foreign exchange earning of the gem and jewellery sector. This is significant in the context that the exports rose to this level from only Rs. 18 million in 1964-65, Rs. 260 million in 1969-70 Rs. 280 million in 1970-71 and Rs. 367.40 million in 1971-72.

During the first three quarters of 1973-74, the export value was of the order of about Rs. 521.80 million. Hong Kong was the largest single buyer. Its purchases were valued at nearly Rs. 118.70 million. Belgium, an equally important market, bought worth Rs. 118 million, followed by USA at Rs. 102 million, Japan Rs. 50.95 million, Netherlands Rs. 33.50 million, UK Rs. 23.70 million, Singapore Rs. 19.55 million, Israel Rs. 16.15 million and France Rs. 10 million.

Contributing to the export effort in the line, M/s. Arun Kumar and Co. of Bombay stepped up their exports of cut and polished diamonds to Rs. 29.32 million compared to Rs. 26.77 million in 1972 and only Rs. 12.20 million in 1971. Set up in 1960, the Company entered the export field only in 1963. Today their clients spread all over the world which include USA, Belgium, Hong Kong and Japan. Recently, they were awarded a certificate of merit by the Government of India for outstanding export performance during 1970-71.

The performance of yet another Bombay firm, M/s. Samir Diamond is also noteworthy in this context. Their exports of cut and polished diamonds were valued at Rs. 24.90 million in 1971-72 which earned them a certificate of merit from the Government of India. The firm is reported to have done still better in subsequent years.

Diamond cutting and polishing industry which had its origin at Panna and Varanasi earlier, has now shifted to Surat and Navsari in the Gujarat State. Today, these centres with the help of thousands of skilled labour are engaged in cutting and polishing rough diamonds not only for home consumption but also for overseas buyers. The industry employing about 25,000 workmen, offers a large variety of cut and polished diamonds in various shapes and sizes. The diamond cutters of Varanasi who are specialised in 'Villandi cut' were able to develop overseas markets, such as, Iran and some West Asian markets because of enormous popularity enjoyed by the 'cut' in these countries. Surat, Navsari and Bombay centres are specialised in single cuts, brilliant cuts, baguette and marquise and also process other fancy cuts.

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The National Minerals and Development Corporation of India (NMDC) are instrumental in further improving the production of diamond industry. They are exploring indigenous sources of diamonds and gem stones. Apart from this, the Gem and Jewellery Export Promotion Council, Bombay, have also a series of programmes on hand to boost production and exports of diamonds among other precious stones. The Council's scheme to set up an institution at Surat for training artisans in the latest techniques of cutting and polishing diamonds, is under progress. The Council is also endeavouring successfully to arrange for consistent supplies of rough diamonds of standard qualities to domestic producers direct from the Diamond Trading Company of London. Rough diamonds are imported in the country by the National Minerals and Development Corporation of India for providing raw materials to the artisans engaged in cutting and polishing of diamonds for the purpose of re-export in finished form.

LOCKS AND PADLOCKS FOR OVERSEAS MARKETS

India's exports of locksmith's wares including padlocks, locks and keys improved marginally to about Rs. 5.90 million in 1972-73 from Rs. 5.40 million in the preceding year.

During the first three quarters of 1973-74 (April-December 1973), the export value of these products was Rs. 5 million. Of this, padlocks earned about Rs. 2.35 million. Poland having bought worth Rs. 1.17 million topped the list of buyers, followed by Netherlands, Czechoslovakia, USA and Bangladesh. Foreign exchange earning of locks and keys was of the order of Rs. 2.70 million. German Democratic Republic with an intake worth Rs. 1.15 million was the chief buyer. Poland, Czechoslovakia, Kenya, Malaysia, USA and UK were among other main destinations.

Adding to the export effort of the industry, M/s. Tiger Locks Ltd. have recently bagged orders worth Rs. 2.40 million. Total orders on hand with the firm amount to Rs. 11.50 million. During January - May this year, exports of the firm's subsidiaries, M/s. Anchor Processing Private Ltd., and M/s: Tiger Products Private Ltd. totalled Rs. 5.70 million.

Alongwith appreciable export performance, M/s. Tiger Locks Ltd., have also achieved considerable success in their expansion programme. A new unit set up by the firm at Gurgaon (Haryana) is expected to go on production stream very shortly. Early this year, the Company took over M/s. Indian Implements Mfg. Co. who are engaged in manufacture of locks in Aligarh. With the implementation of these schemes, the sales of the firm are likely to more than double from the present level of Rs. 19 million.

SIGNAL LENSES IN EXPORT TRADE

From Rs. 6 million in 1971-72, exports of glass in various forms more than doubled to about Rs. 12.70 million in 1972-73. In the first three quarters of 1973-74 (April-December 1973), the export value was of the order of Rs. 10.60 million. Window glass, blanks for special lenses, wire glass sheet, plate glass, safety glass, toughened and laminated glass, laminated sheet, glass mirror and other varieties were active in exports.

Interestingly, a small glass works unit in Talegaon (near Poona in Maharashtra) has recently entered the export field securing an order valued at £ 12,000 for supply of railway signal lenses. Additionally, the firm has received two orders from Federal Republic of Germany—one for special type of lamp shades valued at DM 1 million and another for traffic control signal lenses worth DM 31,000.

The firm is known as 'Paise Fund Glass Works' as it was set up with the capital coming from a contribution of one paise from every home in Maharashtra.

EXPORT PERFORMANCE AND POTENTIAL

OFFICE MACHINE EXPORTS DOUBLED

India's exports of office machines and parts during the first three quarters of 1973-74 (April-December 1974) more than doubled to Rs. 23.40 million compared to Rs. 10.90 million in the same period of 1972-73. The export value was, in fact, more than that of the entire preceding year (1972-73) at Rs. 21.45 million.

During the period April-December of 1973, statistical machines, such as, punches and sorters constituted the major group of export trade in the line. These alone earned Rs. 20.45 million in foreign exchange. Punches were supplied at a value of Rs. 0.70 million to UK. For other items in the group, Japan with an intake worth Rs. 14 million was the leading buyer. Next best purchaser was Australia whose purchases totalled about Rs. 3.90 million. Indonesia (Rs. 0.48 million), New Zealand (Rs. 0.42 million), Philippines (Rs. 0.22 million) and Singapore (Rs. 0.19 million) were the other leading destinations.

Calculating machines (manually operated) were supplied to Hungary, France, Sri Lanka and UK to fetch Rs. 0.72 million. Of this, Hungary alone accounted for an earning of Rs. 0.70 million. Typewriters which constituted another area of export growth contributed nearly Rs. 0.50 million to the total export earning of the group. Bangladesh which bought these at a value of Rs. 0.33 million topped the list of buyers followed by Sri Lanka, Ghana, Nepal, Singapore and USSR.

Duplicating machines were supplied to eight countries including Afghanistan, Burma, Sri Lanka, Nepal, Nigeria, Bangladesh, Tanzania and Thailand. The export value totalled about Rs. 0.25 million. Thailand who bought worth Rs. 88,285 was the major buyer.

Besides complete office machines, parts of these machines netted Rs. 1.48 million in foreign exchange. Of this, statistical machine parts alone accounted for Rs. 0.97 million. France which bought worth Rs. 0.34 million was the principal buyer. Czechoslovakia and UK were the other important purchasers.

The production of calculating and adding machines in India was of the order of 10,500 numbers both in 1973 and 1972 against an installed capacity of 12,500 numbers. Similarly, production of duplicators was around 850 numbers in the both the years against an installed capacity of 870 numbers. The out-turn of duplicators was 5296 numbers in 1973 against 4229 numbers in the preceding year.

For typewriter industry, actual production was 34,836 numbers in 1973. In fact, it was more at 41,971 numbers in the preceding year. There are four units in the organised sector in the line with an installed capacity of 86,400 numbers per year. Two of these units are having foreign collaboration. Besides the existing units, one more unit has received industrial licence for the manufacture of portable typewriters with a capacity of 15,000 numbers every year. Additionally, letters of intent have been issued to four units for setting up new units for a total capacity of 8,69,100 numbers yearly. Besides, two units have been registered for an annual capacity of 19,500 numbers. If all the schemes materialise, the total projected capacity would be 190,000 numbers per annum in due course.

Imports of typewriters are not allowed into the country. Foreign collaboration is, however, permitted for portable and electric typewriters.

SANITARY AND HEATING FIXTURES ACTIVE IN EXPORTS

Overseas demand for India-manufactured sanitary, plumbing, heating and lighting fixtures and fittings is growing rapidly. The exports during the first three quarters (April-December 1973) of 1973-74 brought in increased foreign exchange earning at Rs. 13 million as compared to only Rs. 3.60 million in the same period of the preceding year (April-December 1972). The exports even registered more than 100 per cent increase over the export value in the entire preceding year at Rs. 5.35 million and nearly three fold rise over the exports during 1971-72 at Rs. 4.86 million.

During April-December 1973, central heating boilers and parts and sanitary plumbing fixtures, such as, sink wash basins of ceramic materials and that of iron and steel, lighting fixtures and parts like glass lamps, globes and funnels etc. for lamps and lanterns, hurricane lanterns, oil pressure lamps and other lamps, parts of oil pressure lamps, lighting fitting and parts, complete flashlight cases and parts of flashing excluding bulbs and batteries were supplied to a large number of markets overseas.

Among these, Central heating boilers and parts constituted the major category of sizeable foreign exchange earning which secured nearly Rs. 4.50 million during the period under review, accounting for more than one-third of the total export value. During the entire preceding year of 1972-73, the exports were only Rs. 39,000. Malaysia and Japan were the only buyers duriug April-December 1973 which bought at a value of Rs. 2.52 million and nearly Rs. 2 million respectively During 1972-73, Malaysia was the single destination for this item.

Sink wash basins of ceramic material was the next best active item which brought in Rs. 3.32 million during the period under review of 1973-74. The exports, however, registered significant increase over the exports during 1972-73 valued at Rs, 2.13 million. More than two dozen countries imported this item during April-December 1973 amongst which Kenya, Bangladesh. Federal Republic of Germany, Nigeria, Mauritius and Nepal were significant. During 1972-73, Kenya, Nigeria, Nepal, Belgium and Bangladesh were among the principal importers.

Among other items that were responsible for earning more foreign exchange during the period under review were complete flashlight cases Rs 1.94 million (Rs. 0.45 million in 1972-73); parts of oil pressure lamps Rs. 1.25 million (Rs. 0.58 million); sink wash basins of iron and steel Rs. 0.75 million (Rs. 0.61 million) and hurricane lanterns Rs. 0 52 million (Rs. 0.45 million).

Complete flashlight cases were bought mainly by Poland and Bulgaria (Rs. 1.31 million and Rs. 0.36 million respectively) while parts of oil pressure lamps were imported by about one and a half dozen countries amongst which Iran, Singapore, Philippines and Czechoslovakia were prominent. German Democratic Republic was the leading market for sink wash basins of iron and steel while hurricane lanterns were imported mainly by Afro-Asian countries.

FISH EXPORTS BRING MORE FOREIGN EXCHANGE

Indian overseas supplies of fish and fish preparations during the first three quarters of 1973-74 (April-December 1973) even outstripped the exports during the entire preceding year. The exports earned Rs. 596.30 million in April-December 1973 as compared to nearly Rs. 538 million in the full year of 1972-73. The exports during the corresponding period of 1972-73 (April-December 1972) were of the order of Rs. 381.85 million.

Of the total export realisation during the period under review of 1973-74, fresh and simply preserved fish accounted for the lion's share at Rs. 554.70 million as compared to Rs. 381.85 million in the corresponding period of 1972-73 and Rs. 504.35 million in the full year of 1972-73. Fish in airtight containers also secured more foreign exchange at a value of Rs. 41.60 million during April-December 1973, as compared to Rs. 18.33 million in the same period last year and Rs. 24 million in 1972-73.

In the category of fresh and preserved fish, chilled or frozen prawn and shrimp continued to be the variety of export dynamism during the first three quarters of 1973-74. It fetched the maximum foreign exchange at a value of Rs. 532.53 million. In terms of quantity 27,450 tonnes were supplied to over a dozen countries during the period. Japan continued to be the leading importing country having brought 16,386 tonnes at a cost of Rs. 373.30 million. Next to Japan, USA constituted the second major market which imported 9360 tonnes at Rs. 133 million, followed by Australia (573 tonnes) at Rs. 10.70 million, Federal Republic of Germany (388 tonnes) at Rs. 4.50 million and Sweden (378 tonnes) at Rs. 4.20 million.

During 1972-73, the total export value of chilled or frozen prawn and shrimp totalled Rs. 484.80 million (29,869 tonnes) and these were imported by Japan (Rs. 290.72 million), USA (Rs. 157.37 million), Australia (Rs, 14.70 million) and Sweden (Rs. 5,35 million). France, Denmark, UK and Netherlands were prominent among other buyers.

Besides chilled or frozen prawns and shrimps, the other items exported under fresh and preserved fish during the first three quarters of 1973-74 included : salted dried and smoked fish (Rs. 7.90 million); chilled or frozen lobsters (Rs. 10 million); dried prawns and shrimps (Rs. 2 million) and other miscellaneous varieties.

In the category of fish in airtight containers which earned Rs. 41.60 million in foreign exchange during April-December 1973, canned prawns and shrimps constituted the popular variety abroad. It secured as much as Rs. 39.90 million accounting for the bulk of foreign exchange earning. UK was the largest market for the variety which imported 864 tonnes at a cost of Rs. 20.75 million. Among other destinations USA (218 tonnes) at Rs. 5.35 million, France (202 tonnes) at Rs. 5 million, Netherlands (97 tonnes) at Rs. 2 40 million and Federal Republic of Germany (91 tonnes) at Rs. 2.20 million were significant.

BRIGHT PROSPECTS FOR CASTOR OIL EXPORTS

While castor oil exports from India rose from Rs. 61.80 million in 1971-72 to Rs. 226 million in 1972-73, during the first three quarters of 1973-74, the export value reached a level of Rs. 237.65 million surpassing the high mark reached for the entire preceding year.

During the period under review of 1973-74, the offtake of USSR increased to Rs. 116.85 million. For the entire two preceding years (1972-73 and 1971-72) its intake was worth Rs. 72.85 million and Rs. 55.40 million respectively.

The next best buyer during the period was UK. Its intake nearly doubled to Rs. 53 million compared to Rs. 27 million in 1972-73 (entire year). Interestingly UK's purchases were limited to only Rs. 15,000 in 1971-72. USA who bought worth about Rs. 25.90 million during the period ranked third among the customers' list for the period. Its purchases in the preceding year were higher at Rs. 49.90 million, though limited to only Rs. 16,390 million in 1971-72.

Among other leading buyers for the product, France imported worth Rs. 14.42 million during April-December 1973 against Rs 27.38 million in 1972-73. It did not figure at all in the export list during 1971-72. Other important buyers during the period included Czechoslovakia (Rs. 7.90 million), Netherlands (Rs. 6 75 million), Japan (Rs. 2 90 million), Singapore (Rs. 1.70 million) and Malaysia (Rs. 1 50 million).

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

NEW SCOOTER PROJECT

A Rs. 30 million new scooter project is to be set up shortly by the West Bengal Industrial Development Corporation in West Bengal. The Corporation has entered into a technical collaboration agreement with M/s. Scooters India Limited, Lucknow, Uttar Pradesh, a Government of India enterprise for the manufacture of 30,000 scooters per year.

The Scooters India Limited (SIL) would provide consultancy services, technical know-how and engineering and manufacturing skill to the Corporation for the manufacture of Deluxe Lambretta scooters in the

State of West Bengal. The capacity of the proposed plant which has been placed at 30,000 scooters per annum initially, is likely to be increased further.

With a view to bridge the gap between the growing demand and production of scooters, the Government of India has decided that the State Industrial Development Corporations which have obtained letters of intent but were lacking the availability of indigenous know-how in the line, should be taken within the orbit of M/s. Scooters India Limited in common production plan. The present collaboration of the West Bengal Industrial Development Corporation with SIL is an outcome of this policy.

M/s. Scooters India Limited which was incorporated as a Government of India project in September 1972 following an agreement signed between the Government of India, M/s. Innocenti of Italy and M/s. Automobile Products of India (API) in June 1972, have received an industrial licence for the manufacture of 100,000 two-wheelers and 30,000 three-wheeler scooters per annum. The plant and machinery of two-wheeler plant of M/s. Innocenti of Italy has already been transferred to India and the production is expected to commence from August, 1974. The three-wheeler plant and machinery has already been shipped from Italy.

The licensed capacity in respect of scooters and three-wheelers together is placed at 127,200 numbers while the installed capacity in respect of scooters alone is of the order of 60,000 numbers and for three-wheelers it is 13,800 numbers. With the additional capacity to the tune of 556,000 numbers approved by the Indian Government in the field of scooter manufacture, the total capacity likely to materalise by the end of 1973-74 is to be 160,000 numbers. Similarly, in the area of three-wheeler manufacture, the additional capacity of 226,000 numbers has been approved.

For 1973, combined production of scooters, motorcycles and mopeds is estimated at 150,903 numbers. There has been sizeable increase in the production of scooters during the year. At the end of 1973-74, the demand for scooters, motorcycles and mopeds has been estimated at 200,000 numbers per annum while the production target for these vehicles during the Fifth Plan has been estimated at 570,000 numbers

IMPORT SUBSTITUTION IN ELECTRONICS

With the current tempo of import substitution in India's electronic sector, the Indian electonic industry is poised to save sizeable amount of foreign exchange in the coming years. A large number of units are engaged in the production of a wide range of electronic items including the sophisticated ones. The volume of import substitution achieved by the units in the public sector is indeed noteworthy. In this context, the endeavour for import substitution of M/s. Electronics Corporation of India (ECIL), Hyderabad valued as much as Rs. 60 million during 1973-74 indicates bright prospects for the industry not only from the viewpoint of enlarging the production range in electronics but for also reducing India's dependence on foreign sources.

During the year, the Corporotion added to its manufacturing range a number of new sophisticated electronic systems, instruments and components which find wide applications in nuclear power plants, railways, defence, communication, medicine, research laboratories and various other institutions. In the preceding year also, the Corporation developed and manufactured a number of new products on the systems side, instruments side and other equipment.

During the year under review, ECIL achieved production growth rate of over 75 per cent with the production turnover at Rs. 115.70 million over that of 1972-73 at Rs. 65.75 million. Its production during 1971-72 was Rs. 36.40 million. Apart from making significant progress in production, the Corporation entered into the export field on a modest scale. It has recently executed an export order received by it from the United States for supply of 160,000 pieces of moulded metal film resistors to that country.

India's total production of electronic items totalled Rs. 2420 million during 1973-74 which registered a significant increase over the production during 1972-73 at Rs. 2060 million and Rs. 1800 million in 1971-72. During the Fifth Plan (1974-79), an investment of Rs. 2016 million has been proposed, of which Rs. 1343 million would be allocated to the public sector and Rs. 674 million to the private sector.

WRIST WATCH INDUSTRY

SOME FACTS

Comparatively a fresh entrant in the engineering sector of India, wrist watch industry is steadily gathering momentum in the field of production. India which was a net importer of wrist watches till recently, has now emerged as a manufacturer of quality watches in the world. The wrist watch industry in India has achieved competence to manufacture quality wathes which can be compared well with those manufactured abroad. Now it is poised to meet the bulk of home demand as also to satisfy the needs of sophisticated buyers abroad.

Included in the non priority sector, the watch industry has in its infrastructure 2 units, one each in the public and private sectors. The licensed and installed capacity of the industry is placed at 670,000 numbers (1972) and additional capacity to the tune of 1.56 million numbers has recently been approved by the Indian Government. Thus, the total capacity likely to have materialised by the end of 1973-74 has been estimated at 770,000 numbers.

Way back in 1967, production of wrist watches was of the order of 0.26 million numbers. It improved to 0.36 million in the following year to rise further to 0.42 million numbers in 1969, 0.46 million numbers in 1970 and 0.47 million numbers in 1971. The production during 1972, however, declined to 0.42 million numbers. In 1973, the production was expected to go up further.

M/s. Hindustan Machine Tools (HMT), Bangalore, primarily a machine tools manufacturing unit in the public sector, undertook manufacture of watches in technical collaboration with M/s. Citizen Watch Company Limited, Japan, while the other unit in the private sector, M/s. Indo-French Time Industries Limited, Bombay, manufactures these in technical and financial collaboration with a French firm of repute in the line. HMT's total production of watches upto 1971-72, amounted to 0.44 million pieces valued at Rs. 45 million. It has recently finalised plans to step up production and diversification to undertake production of about 200,000 automatic calender watches in collaboration with the Japanese firm. HMT's automatic watch production upto 1972, totalled 9757 automatic watches at a value of Rs. 2.95 million.

The Bangalore Company has further plans to promote ancillary watch manufacturing units in various states of the country with a view to improve watch production.

The parts and components required for watch production are available indigenously but special brass rods and strips, stainless steel strips and sheets, special steel strips, wires and chemicals are procured from abroad. The amount of import substitution achieved in this line is of the order of 84 per cent.

The industry has to depend on imports for special raw material and components mainly from the West European countries and Japan.

During 1973-74, the watch industry earned foreign exchange at a value of Rs. 0.21 million. During the year, wrist watches, clocks with watch movements, electric clocks, one day alarm clocks, tunepieces, watch cases and parts and assembled clock mevements were exported to about two dozen markets which included even developed countries like New Zealand, Australia Czechoslovakia, UK and Japan.

PRODUCTION REVIEW OF A FERTILISER UNIT

M/s. Fertiliser Corporation of India Limited (FCI), a public sector enterprise engaged in the fertiliser production accounts for achievement of the bulk of the installed capacity in the line. The Corporation has 6 operating units under its control, namely, Sindri, Nangal, Trombay, Gorakhpur, Namrup, and Durgapur. The last of these commenced production only recently.

During 1972-73, FCI produced 0.29 million tonnes of nitrogenous fertiliser. However, in the preceding year, the production was marginally higher at 0.30 million tonnes. During 1970-71, it was 0.26 million tonnes. In the field of phosphate (P_5O_5), the production during 1972-73 totalled 37,000 tonnes as compared to 34,000 tonnes in 1971-72 and 24,000 tonnes in 1970-71. FCI also produces potash (K_2O). During 1972-73, its production of K_2O was of the order of 37,000 tonnes which was higher than the production in the preceding year (1971-72) at 23,000 tonnes and 11,000 tonnes in 1970-71.

The overall attainable capacity of all the units (considering Sindri plant's capacity at 75,000 tonnes of nitrogen) of FCI stands at 0.36 million tonnes of nitrogen. During the year under review, capacity utilisation of the Trombay unit was of the order of 91 per cent in respect of nitrogen and phosphate manufacture. The percentages of capacity utilisation in respect of nitrogen of the other units of FCI during the year were : 78 per cent of Namrup unit, 86 per cent of the Gorakhpur unit and average of 78 per cent in respect of Nangal and Sindri units. The overall capacity utilisation of all the units during 1972-73 was the highest ever at 83 per cent as compared to 80 per cent in 1971-72 and 75 per cent in 1970-71.

Indian fertiliser industry, notwithstanding various constraints at production level, is embarking upon active plans to increase its production of fertilisers with an objective to meet the bulk of country's total requirements. The installed capacity in the line is being expanded consistently by way of setting up new plants as also through expansion of the existing ones. During 1973, the installed capacity in the production of nitrogenous fertilisers totalled 1.46 million tonnes while in the area of phosphatic (P_2O_5), it was 0.50 million tonnes. The capacity in nitrogenous fertiliser production was expanded to 1.94 million tonnes during 1973-74. However, in the area of P_2O_5, it was kept at the preceding year's level.

GRINDING MEDIA

A SPOTLIGHT

Grinding media industry which caters to the requirements of a number of engineering industries, has been well established in India. The licensed capacity of the industry is placed at 30,520 tonnes while the installed capacity is of the order of 26,025 tonnes. The total capacity likely to have materialised by the end of 1973-74 has been assessed at the licensed capacity level.

In all 10 units were engaged in the production of grinding media which achieved production at 14,000 tonnes during 1973 as compared to 13,034 tonnes in 1972. The production during 1971, in fact, was the highest ever at 17,353 tonnes. It went up to the aforesaid levels from only 9,200 tonnes in 1967. The production target for the Fourth Five Year was set at 27,000 tonnes while the estimated demand for 1973-74 was estimated at the same number of tonnes.

Indian Government encourages further licensing in this line of manufacture for establishment of new units as also for expansion of the existing units but foreign collaboration is not permitted. Imports of grinding media are not allowed but some items of raw materials, such as, heavy melting scrap and electrodes etc. are allowed to be imported due to short supply of heavy melting scrap and electrodes from domestic sources. Among the raw material mix required for the production of grinding media, pig iron, steel scrap and electrodes are partially available indigenously.

Among the items of grinding media, ball and clyphebs are supplied overseas. During 1972-73, these were exported to Yugoslavia and U.K.

SALT PRODUCTION IN PUBLIC SECTOR

M/s. Hindustan Salts Limited and M/s. Sambhar Salts Limited are the two public sector enterprises in India engaged primarily in the production of processed salts and by-products. Of these two, the former came into being in 1958 and went on stream in 1959 while the latter became operational in 1964 only. M/s. Sambhar Salts Limited is a subsidiary company of M/s. Hindustan Salts Limited.

M/s, Hindustan Salts Limited, as a matter of fact, came into being when the salt sources of Kharaghoda (Gujarat), Sambhar Lake and Didwana in Rajasthan were transferred to the Company by the Government of India. However, during 1960, the Didwana sources were subsequently transferred to the Government of Rajasthan but during 1963 the Mandi Salt Mines in Himachal Pradesh were transferred to the Company. Only after one year—in 1964, M/s. Sambhar Salts Limited, emerged as a subsidiary company of M/s. Hindustan Salts Limited with the share ratio of 60 per cent : 40 per cent of M/s. Hindustan Salts Limited and the Government of Rajasthan respectively. The two units, namely, Kharaghoda Salt Source and Mandi Salt Mines are with this company.

Unlike other perennial manufacturing organisations, the installed capacity in this line of production is not fixed but production target for every year is fixed based on the assessment of rainfall in the preceding year, the stocks in hand and the estimated market demand.

During 1972-73, the production of M/s. Hindustan Salts Ltd; was of the order of 101,165 tonnes as against 78,709 tonnes in the preceding year, registering a sizeable increase. Of the production during 1972-73, the Kharaghoda unit accounted for 96,797 tonnes as against 73,933 tonnes (1971-72) while the Mandi unit contributed 4368 tonnes against 4776 tonnes last year. Notwithstanding various constraints at production level, the Mandi unit was in a position to maintain the production more or less in the neighbourhood of the preceding year's level. The Company hopes to achieve salt manufacture of the best quality as also utilise its co-products. The Company has active plans for diversification. Only recently, the Planning Commission has approved its project for recovery of Bromine during the Fifth Five Year Plan.

M/s. Sambhar Salts Limited has with it the single largest inland salt source in India - the Sambhar Lake. This lake is located at a distance of about 98 kilometres from Jaipur, the capital of Rajasthan. Mainly two varieties of salts are produced at the lake viz., salt from lake brine - 'kyar salt' and salt from sub-soil brine—'pan salt'. Certain quantities of brine grained salt which is known as 'reshta salt' are also obtained which are deposited on the kyars by wind action. The kyar and reshta salt varieties are free from calcium and magnesium impurities and as such are ideally suitable for direct use in salt-based industries. Particularly, kyar salt is in heavy demand for industrial and consumption purposes.

For 1972-73 (1st October 1972 - 30th September 1973), the production target in respect of common salt was placed at 200,000 metric tonnes while the actual production was of the order of 257,635 metric tonnes. In the preceding year, as against the target of 174,000 metric tonnes, the actual production achieved was 176,195 mertic tonnes. The break-up of production of processed salts and their by-products during 1972-73 and 1971-72 was : dairy salt 238 tonnes and 307 tonnes; table salt 35.10 tonnes and 51.70 tonnes; sodium sulphate 146 tonnes and 100 tonnes and burkeite 306 tonnes and 300 tonnes. Apart from the progress achieved in the field of production, the Company has embarked upon a diversification plan. It is already exploring methods for the recovery of some of the valuable by-products available in the salt bitterns at Sambhar Lake. The Planning Commission has approved the project for recovery of sodium sulphate in the Fifth Five Year Plan.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

NATIONAL CHEMICAL LABORATORY

The National Chemical Laboratory (NCL), Poona, one of the principal research and development organisations in India has been continually contributing its research endeavour in the national development, particularly in the field of chemicals and allied areas. Today, research activities of NCL cover a comprehensive areas of chemicals and allied products like petrochemicals and bulk organic chemicals, pesticides, drugs, pharmaceuticals and fine chemicals; organic intermediates, dyes and industrial chemicals; utilisation of plant and forest resources; the chemistry of biologically active compounds; studies in organic synthesis; radiation chemistry; studies in physical organic chemistrial industrial polymers, resins, elastomers and synthetic fibres; inorganic chemicals and catalysts; utilisation of mineral resources; organo metallics; solid state materials; instrument technology; tissue culture studies; enzymes and fermentation technology and process development and chemical engineering studies. With such a vast field of research, NCL today is marching ahead keeping in sight the massive problems of industrial development and India's socio-economic needs.

During 1972-73, based on technology developed by NCL, as many as 48 processes were utilised for production as against 51 in the preceding year. The value of production, however, gone up from Rs. 47 million in 1971-72 to Rs. 55.70 million in the following year. The value of production based on NCL processes registered an eightfold increase during the preceding 5 years. On the basis of NCL know-how, a large number of products were manufactured during 1972-73. In the field of pharmaceuticals, the items include acriflavine, berberine hydrochloride, calcium hypophosphite, carbimazole, catechol, clofibrate, 4-Hydroxycoumarin, B-Ionove and sorbide nitrate. Apart from pharmaceutical products, acetanilide (intermediate), adhesive for decorative laminates (laminates), anion exchange resin from melamine (demineralization of liquids), antipriming compositions (in locomotives), bacterial diastase (textile desizing), butyl titanate (varnishes, enamels) cadmium sulphide photoconductive cells, ferrites and thermistors (electronics) calcium silicate (low density insulators), can sealing compotition (metal can industry), cation exchange resin from CNSL (demineralization of liquids), chloral hydrate (industrial chemicals), diethyl-m-amino phenol (dye-intermediate), dimethylaniline (industrial chemicals) ethylene oxide condensates (surface active agents), geraniol, nicotive sulphate (insecticides), orthotolyl biguanide (soap), perfumery products based on A^3 - carene (meracene) and on longifolene (capinone), B-phenethyl alcohol, geraiol, citronellal and citronellol, B-Iodine dihydroisojasmone and peach aldehyde; rubber blowing agents, rubber reclaiming agents, (rubber chemicals); test-butylcatechol (synthetic rubber); dimethylaniline and chloral hydrate (industrial chemicals); phthalatesdioctyl and debutyl and dimethyl (plasticisers); polyurethande printing rollers (printing); rigid filters (tube wells); rubberised cork sheet, (gasket); sachets-hot and cold (substitute for hotwater and ice water bag), silica gel (humidity control); vapour phase chromatograph (instruments) and wrafarin (rodenticides).

There are as many as 62 NCL processes which have been released and awaiting production. These processes relate to the fields of chemical, pharmaceutical, dyestuffs, man-made fibres, industrial chemicals, oil filteration, electronics, refrigeration. steel foundry, synthetic rubbber, explosives, insecticides, fungicides and weedicides, textile chemicals, perfumes, printing, instrumentation, biochemistry, meteorology, perfumery and cosmetics. In commercial implementation of some of the high valume/value projects like chloromethanes, chlobenzenes, vitamin C and opium alkaloids a considerable progress has been envisaged. Among the processes released and awaiting production, 18 projects have been recently licensed and are expected to have a considerable economic impact. It is estimated that the annual production based on NCL know-how during the Fifth Five Year Plan period would be in the range of Rs. 100 to 150 million.

During 1972-73, production of butyl titanate, clofibrate and dimethylaniline was undertaken for the first time. M/s. Synthochem of Indore, Madhya Pradesh have set up a plant for the production of butyl titanate used in varnishes and enamels, and produced 16.6 tonnes valued at Rs. 500,000. Another firm of Hyderabad (A.P.) commenced trial production of clofibrate while a Poona firm, M/s. Sahyadri Dyestuff and Chemicals produced during the year 25 tonnes of dimethylaniline at a cost of Rs. 250,000. Besides, M/s. Sonebon Laboratories of Kottayam also established production of dihydroisojasmone and peach aldehyde during the year.

A plant having a capacity of 4000 TPA of chlorobenzenes, based on NCL know-how, has been recently completed by M/s. Hindustan Organic Chemicals, (HOC) Rasayani and is expected to be commissioned shortly. The acetanilide plant of HOC attained near-rated capacity and the value of production during 1972-73 was estimated over Rs. 13.80 million. One more plant for the production of chloromethanes based on NCL know-how, with an installed capacity of 3000 TPA is under erection by M/s. Standard Alkali, Thana, near Bombay.

During the year (1972-73), 17 processes were licensed to 21 parties through the National Research and Development Corporation (NRDC), New Delhi, in addition to 7 projects on which work was already completed on sponsored basis.

So far (as on 31st March 1973), in all 111 processes have been developed by NCL of which 29 are in production, 31 released but awaiting production, and 51 available for release.

NCL is engagaged in project oriented research also. During 1972-73, production oriented research projects in operation amounted to 88. Of these, 5 pertained to the field of petrochemicals and bulk organic chemicals, 6 in pesticides, 7 in drugs, pharmaceuticals and fine chemicals; 6 in inorganic intermediates dyes and industrial chemicals; 18 in the field of utilisation of forest and plant resources; 3 in chemistry of biologically active compounds; 10 in industrial polymers, resins and clastomers, 7 in inorganic chemicals and catalysts; 2 in utilisation of mineral resources; 4 in organo metallics; 5 in solid state materials; 4 in the instrument technology, 1 in enzymes chemistry, 4 in fermentation technology and 6 in process development and chemical engineering studies.

MORPHOLINE

The National Chemical Laboratory (NCL), Poona has developed a process for the manufacture of morpholine which is a versatile chemical used primarily as an intermediate for rubber chemicals as a corrosion inhibitor. Its derivatives are particularly useful in the textile industry as softners and optical brightners.

The NCL proeess involves straightforward dehydration of diethanolamine. A new method, involving extractive distillation accompanied by azeotropic separation, for the recovery of morpholine from aqueous solution has been worked out. The process is developed on 400 gm per batch scale, with 90 per cent yield.

The NCL product compares very well with the imported morpholine. The total demand of the product is expected to go up to 800 tonnes per annum, once indigenous production is established. A unit of 300 tonnes per annum production is assumed for the cost estimates.

The main items of raw material required for the manufacture of the NCL product are diethanolamine, oleum, sodium hydroxide and 2-ethyl hexanol (make up). At present diethanolamine will have to be imported. However, it is going to be produced by M/s. India Carbon Ltd., Bombay shortly.

SILICON TETRACHLORIDE

A continuous fluidized-bed process for the production of silicon tetrachloride from ferrosilicon has been developed by the National Chemical Laboratory (NCL), Poona.

Silicon tetrachloride is one of the important halides of silicon having wide applications. It is used in the manufacture of fumed silica (white carbon) which is used as a reinforcing, thickening and thixotropic agent in rubber and plastic industry. It also finds application as a dispersing agent in pesticide sprays. Other important applications include manufacture of ethyl and other organic silicates. Pure silicon and silicones can also be produced from silicon tetrachloride.

The process has been worked out on a 10 kg. per hour scale and the product conforms to the standards. The process is ready for release and will shortly be referred to the National Research Development Corporation of India, 61, Ring Road, Lajpat Nagar-III, New Delhi for commercialisation.

INDO-CANADIAN TRADE

Canada is one of the most important trade partners of India, Not only Canada is one of the major buyers of Indian goods but also she is one of the largest suppliers. The table below indicates the trends in the Indo-Canadian trade during the last seven years :

(In million Rs.)

Year	Imports from India into Canada	Imports from Canada into India
1967-68	298	983
1968-69	297	986
1969-70	263	749
1970-71	280	1172
1971-72	394	1138
1972-73	282	1051
1973-74 (April-Dec)	223	844

In the period April-December 1973, Canada's share in India's total exports was 1.3 per cent and 4 per cent in India's imports.

India's exports to Canada could be broadly classified under the following eategories :—

(a) Traditional items like jute manufactures, cashewnuts, coir and coir mats, oriental rugs, pepper etc. in which India enjoys a near monopoly in Canada's Import Trade.

(b) Traditional items in which India makes sizeable exports but is not in a pre-eminent position compared to other countries. These include tea (black), walnuts, coffee, spices etc.

(c) Non-traditional items like engineering goods, leather and leather products, plastic goods, sports goods etc. wherein India's export is negligible in the total imports by Canada.

In 1971-72 India's exports to Canada registered an increase of about 45 per cent over 1970-71. Most of the items of export, such as, jute goods, sugar, gems and jewellery, cotton textiles, cashew nuts, handicrafts, art silk fabrics, coffee, chemicals and allied products and leather showed improvement. The major share of the rise i.e. Rs. 81 million out of Rs. 114 million, however, was accounted for by higher exports of jute goods and sugar. In 1972-73, exports of jute goods came down-lower than even the earlier level and there were no exports of sugar due to limited availability. As a result, the total exports in 1972-73 were only marginally higher than the level in 1969-70 or 1970-71 and 28 per cent lower than the level reached in 1971-72.

In 1972-73, exports of jute goods were valued at Rs. 95 million against Rs. 160 million in 1971-72, Rs. 116 million in 1970-71 and Rs. 139 million in 1969-70. Upto 1969-70, jute goods accounted for about 50 per cent of Indian exports to Canada but since then the share has come down to about 40 per cent. Export of tea, another traditional item of export to Canada is gradually declining. India's share in total tea imports into Canada has declined from 34.66 per cent to 13.96 per cent in 1972 in terms of quantity. The decline is attributed to availability of lower priced teas from East Africa and a more or less stagnant market. Exports of leather and leather manufactures, cotton textiles, gems and jewellery also declined marginally. On the other hand, exports of cashew nuts, coffee, spices and woollen carpets were higher marginally. The rise in exports of engineering goods in 1972-73 was quite substantial at Rs. 5 million against Rs. 3 million in the preceding year,

India's exports to Canada in 1973-74 seem to be on the same pattern as in the preceding year. Total exports during the first three quarters amounted to Rs. 223 million, almost the same as in the corresponding period of the last year (Rs. 220 million). Commoditywise statistics are available only for the first two quarters of 1973-74 i.e. April-September 1973. Jute manufactures exported during April-September 1973 were valued at Rs. 45 milllon, a decline of about 35 per cent from Rs. 68 million in April-September 1972. Exports of tea and coffee during the period under review amounted to Rs. 9 million and Rs. 4 million respectively.

Cashew and other nuts and fruits fetched Rs. 26 million. Cotton fabrics earned Rs. 12 million and ready-made clothes another Rs. 5 million. Carpets exported during this period were valued at Rs. 9 million. Spices, another traditional item accounted for Rs. 6 million.

Export of Indian engineering products to Canada are still less. Exports during April-September 1973 earned only Rs. 4 million, about 2 per cent of India's exports to Canada during the period. It seems that the Canadians are not yet fully aware of the capability that India has attained in the fields of engineering and chemical sectors. India is in a position to meet a variety of Canadian requirements like steel structurals, steel and iron castings and forgings, industrial machinery, machine tools, transmission line towers, etc. and has already supplied these items to a number of advanced countries including USA.

India's imports from Canada are quite substantial - about 5 per cent of her total imports. Thus, India has generally substantial adverse balance of trade with Canada. However, a major portion of the imports from Canada - about 65 per cent is being financed through loans and grants from the Canadian Government. The major items of imports from Canada are cereals, skimmed milk powder, oil seeds, pulp, sulphur, copper, zinc, nickel, asbestos, fertilisers, paper and paper board, electrical machinery and transport equipment.

Indian products exported to Canada enjoy Commonwealth Preferences. Under the present system, about 60 per cent of Indian exports to Canada, such as, tea, cashew, jute manufactures, gems, raw cotton handicrafts and fish enter duty-free. Other items accounting for about 20 per cent of Indian exports to Canada, such as, sugar and chutneys get entry into Canada under preferential rates. It is hoped that present preferential treatment of Indian goods would be continued in future also.

Canada has been assisting India in setting up various irrigation and power projects including nuclear power plants in India. Negotiations are also going on for assistance in setting up a paper project in India. On the other hand, an Indian Firm M/s. Anil Hardboard of Bombay have set up with its own know-how, a hard board factory in Canada which started production in 1967. The factory is reported to be doing well.

It appears that there is a vast scope for expansion of trade between the two countries. Canadian imports from India account for only 0.24 per cent of her total imports. A number of items have been identified seem to have an export potential in the Canadian market. They are electronic equipment and components, bicycles and components, ferrous castings and forgings, stainless steel cutlery, small tools and hand tools in the engineering field, ready made garments, leather garments, fish and other marine products, toys and decoratives and handicrafts. ☐

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SYNTHETIC ENAMELS TO SOVIET UNION

Among a wide range of chemical products manufactured in India, synthetic enamels, although a late enterant in the export stream, have in recent years, attracted growing overseas demand. During 1972-73, this single product brought in about Rs. 17.75 million in foreign exchange as compared to Rs. 8.3 million in the preceding year. USSR was the foremost destination during both the years.

Even during the first nine months of 1973-74 (April-December 1973), the export value was Rs. 8.90 million. As in earlier years, USSR retained its position of the leading buyer during the period, absorbing major share of the export supplies at a value of Rs. 7.60 million. Abu Dhabi, Netherlands, Mauritius, Ethiopia, Dubai and Fiji Islands were prominent among other destinations during the period.

Recently, M/s. Beck and Company (India) Ltd., Pimpri, Poona-18 secured a sizeable contract from USSR for supply of synthetic enamels worth about Rs. 7 million. In addition to this, the firm has also bagged another order for supply of epoxy-filled cable joints valued at Rs. 1.40 million from Kuwait.

The Poona firm has been regularly exporting its products to a number of countries including USSR, USA, Arab Republic of Egypt, Greece and Malaysia. To-date, their total exports are reported to have reached a level of Rs. 150 million.

During 1972-73, India's chemicals and chemical products earned foreign exchange at a value of Rs. 76.45 million compared to Rs. 71.75 million in the preceding year. Of this, organic chemicals secured Rs. 28.30 million while the share of inorganic chemicals was of the order of Rs. 48.15 million. During the first three quarters of 1973-74, the export value was about Rs. 73.80 million against Rs. 62.50 million in the same period of the preceding year.

WIRE ROPES ACTIVE IN EXPORT TRADE

Besides catering to the home demand, the wire rope industry in India is active in the export field as well. In 1972-73, the industry earned foreign exchange to the tune of Rs. 16.94 million. The performance during the year 1973-74 is expected to be considerably better as even during the first three quarters of the year (April-December 1973), the export value was nearly Rs. 16 million.

Of the total export earning during April-December 1973, the share of black wire ropes made of iron or steel was Rs. 6.15 million (1770 tonnes) while galvanised wire ropes of iron or steel fetched about Rs. 9.50 million (2843 tonnes). The contribution of other varieties of wire was insignificant.

During the period, USA and Singapore were the prominent importers of Indian supplies of black wire ropes at a value of about Rs. 1.28 million and Rs. 1 million respectively. With an intake worth Rs. 0.61 million, USSR was the next important buyer, followed by Bangladesh, Yugoslavia, Kuwait, Turkey, Thailand, Democratic Republic of Korea, Hong Kong, Iraq and Abu Dhabi. For galvanised wire ropes, USSR which bought these at Rs. 5 million was the best destination. Next important buyer was USA whose intake amounted to Rs. 1.35 million, followed by Yugoslavia at Rs. 0.75 million and Hong Kong at Rs. 0.61 million. Australia, Canada, Republic of Korea, Kuwait and Singapore were among other significant destinations.

M/s. Usha Martin Black (Wire Ropes) Ltd. (14, Princept Street, Calcutta), one of the leading manufacturers in the line, have contributed appreciably to the export effort of wire rope industry. They set up a new record in 1973 by exporting their wire ropes to 43 different countries. Their foreign exchange earning during the year totalled Rs. 1.24 million, reported to be the highest achieved for a year by any unit in the line in the country, Creditably, the firm has succeeded in introducing their products in new sophisticated markets of USA and Europe. Alongside progress in export, total sales of the Company also improved to Rs. 96.50 million in 1973 compared to Rs. 86.30 million in the preceding year. At domestic level, the Government is one of their major buyers.

To meet the growing demand for its products, both at home and abroad, the Calcutta firm is constantly endeavouring to improve its production turnover. In this context, the expansion of the Ranchi unit of the Company to manufacture 720 tonnes of wire ropes has already been geared up. The plant for its machinery division at Bangalore is under installation and is likely to be commissioned very shortly.

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Listed among priority industries, the wire rope industry in India, is spread over nine units with an installed capacity of 44,340 tonnes a year. Actual production in 1972 was of the order of 20,000 tonnes. Indigenous production of wire ropes is currently being used in mines upto depth of 350 metres. Of the two major raw materials required by the industry, namely high carbon wire rods and zinc, 60 per cent and 30 per cent respectively of the total requirements are available from indigenous sources.

ALUMINIUM CONDUCTORS TO OVERSEAS MARKETS

Steel reinforced aluminium conductors (ACSR), manufactured in India, are gaining popularity in overseas markets. Of the total exports of aluminium and aluminium products valued at nearly Rs. 34.55 million in 1972-73, aluminium conductors (ACSR) alone accounted for Rs. 25.36 million.

During the first three quarters of 1973-74, the export value of these conductors totalled nearly Rs. 21 million. During the period, Iran proved to be the most important market at Rs. 7.48 million, closely followed by U.S.S.R. at Rs. 7.16 million. Libya was the next best importer at Rs. 4.14 million. Sri Lanka (Rs. 0.57 million), Singapore (Rs. 3.86 million), Qatar (Rs. 3.45 million), Nigeria (Rs. 3.35 million) and Zambia (Rs. 0.30 million) were the other important export destinations.

Contributing to the export effort in the line, M/s Aluminium Industries Ltd. (ALIND), M. G. Road, Cochin, recently bagged a sizeable order for supply of 5000 km all-aluminium conductors to the National Electricity Administration of Baghdad (Iraq). Valued at Rs. 7 million, the order is reported to be the biggest ever of its kind so far. Beginning this month, the supplies against the order are expected to be completed during the next ten months.

Recently the Cochin firm has also effected shipments of aluminium conductors and accessories valued at Rs. 0.40 million to Philippines and Zambia. To date, export orders pending with the firm for supply of ACSR/AAC conductors and steel earthwires total Rs. 13.50 million. Sri Lanka, Iraq, Zambia, Philippines and Bangladesh are significant among their customers.

ALIND have a consistent record of increased export turnover. Their overseas supplies of aluminium conductors and cables were valued at Rs. 5.10 million in 1973-74, approximately 24 per cent more than the export value in the preceding year. The supplies were directed mainly to Zambia and Philippines. The firm expects to cross Rs. 10 million mark for their exports in the current year.

Besides wires and cables, ALIND is also exporting wire working machines and high voltage switchgears.

During 1972-73, the firm produced about 113,340 tonnes of conductors compared to 11,170 tonnes in 1971-72. Production of switchgears too improved to Rs. 9 million from Rs. 6.7 milion while machinery output improved by 25 per cent in 1972-73 as compared to the preceding year.

Another manufacturer in the line, M/s. Indian Cable Co. Ltd., 9, Hare Street, Calcutta is also reported to have bagged an order valued at Rs. 2 million for supply of 26 km. 11,000 volts aluminium conductor paper insulated power cables to the Sarawak Electricity supply Corporation in Malaysia. The order is to be executed during the current financial year.

Categorised as one of the priority industries, ACSR/AAC industry has an installed capacity of 106,850 tonnes spread over 40 units including 2 in the public sector. Actual production was of the order of 58,000 tonnes in 1973 compared to 23,600 tonnes about a decade back in 1960-61.

Besides ACSR/AAC conductors, the range of items produced by the Cable and Wire industry in India, includes winding wires and strips, PILC power cables, PVC power cables, PVC/VIR cables, dry core cables, coaxial cables, and bare copper conductors. During 1973, installed capacity and actual production of winding wires was 201,974 tonnes and 15,000 tonnes respectively for enamelled winding wires and 15,580 tonnes and 5200 tonnes in respect paper covered winding wires. The figures for other varieties were: PILC power cables and PVC power cables 21,310 tonnes and 15,000 tonnes; PVC/VIR cables 1215 MCM and 620 MCM; drycore cables 4,000 kms and 3,000 kms; coaxial cables 4250 kms and 800 kms and bare copper conductors 14,200 MT and 1000 MT.

EXPORT PERFORMANCE AND POTENTIAL

COIR EXPORTS UP

India's export trade in coir and coir products reached an all time high during 1973-74. During the year, the exports secured foreign exchange at Rs. 155.50 million as compared to Rs. 149.50 million in the preceding year. The export target set for the year was of the order of Rs. 155 million, according to the Coir Board, Cochin-16, (Kerala).

Although the quantum of overseas supplies declined from 49,480 tonnes in 1972-73 to 46,690 tonnes in the following year, the increased export earning was due to more unit value realisation.

During 1973-74, as in the preceding year, coir yarn continued to be the active export item. It earned Rs. 82.20 million during the year, registering a negligible increase over the exports in the last year at Rs. 81.82 million. During the year, 293,731 quintals against 319,085 quintals (1972-73) were supplied abroad. Coir mats which brought in Rs. 52.65 million during 1972-73 improved their offtake during the following year to Rs. 57.35 million. Quantumwise, against 127,486 quintals (1972-73), 123,016 quintals were exported. The exports of coir mattings also improved by a good margin—Rs. 10.30 million from Rs. 7.25 million (26,901 quintals against 19,440 quintals).

Besides these principal items, exports of other items such as, curled coir, coir rope and rubberised coir goods also registered improvement during 1973-74. For instance, exports of curled coir improved to Rs. 1.55 million (12,082 quintals) from nearly Rs. 1 million (7726 quintals), coir rope Rs. 0.28 million (1403 quintals) from Rs. 0.16 million (1043 quintals) and rubberised coir goods Rs. 39,370 (31 quintals) from Rs. 1075 (1 quintal).

During the year, coir rugs and carpets and coir fibre constituted the only items of reduced overseas intake. The decrease in the export value of coir rugs and carpets, however, was more sharp. The exports came down to Rs. 3.22 million (6752 quintals) during 1973-74 from Rs. 5.88 million (16,700 quintals). The decline was moderate in respect of coir fibre—Rs. 0.38 million (2755 quintals) against Rs. 0.46 million (2985 quintals).

Destinationwise, about one and half a dozen countries constituted the leading importing destinations of cair yarn during the year under review. Amongst these, France was the leading market which bought 46,373 quintals at a value of Rs. 12.72 million, followed by Netherlands 34,877 quintals at Rs. 10.30 million, Italy 34,976 quintals at nearly Rs. 10 million, USA 36,908 quintals at Rs. 9 million, Belgium 21,960 quintals at Rs. 6.25 million and Federal Republic of Germany 19,982 quintals at Rs. 5.56 million. Among others, German Democratic Republic, United Kingdom, Poland, Czechoslovakia and Burma were significant.

UK continued to be the principal market for coir mats as in the preceding year having bought 25,692 quintals at a cost of Rs. 13.30 million as compared to 32,321 quintals at Rs. 14.60 million in 1972-73. USA which was the next best buyer during the year also purchased less at Rs. 8 million as compared to Rs. 8.30 million. Italy improved its intake sizeably to Rs. 7.27 million from its preceding year's level of Rs. 2.80 million. Australia also improved its imports from Rs. 4.10 million to Rs. 5.45 million and Canada from Rs. 2 million to Rs. 2.60 million. Denmark, Czechoslovakia, New Zealand, Hungary, Bulgaria and Greece were the other markets which improved their intake during 1973-74.

INDIAN METAL ARTWARE POPULAR IN USA

United States is a leading buyer of Indian metal artware. From year to year, its share in India's total exports of these items is going up at a sharp rate. During the first three quarters of 1973-74 (April-December 1973), USA's imports were maximum at Rs. 30.25 million which accounted for more than one-thirds of India's total exports during the period at Rs. 89.50 million. In the preceding year also, USA was the principal importer – Rs. 30.76 million against total exports of Rs. 86.50 million. In earlier years, USA's share was Rs 26.55 million against total exports of Rs. 71 million in 1971-72, Rs. 25 million out of total exports of nearly Rs. 65 million in 1970-71 and Rs. 21.15 million in total export trade at Rs. 54.50 million in 1969-70.

During April-December 1973, next to USA, Federal Republic of Germany was the second best market which imported worth Rs. 8.30 million, followed by UK at Rs. 6.50 million, Saudi Arabia at Rs. 6.40 million, Netherlands Rs. 4.45 million and USSR Rs. 4.25 million. Denmark, Czechoslovakia, Canada, Australia, Poland, Sweden, Norway, Italy and Japan were the other important markets.

During the full year of 1972-73, USA was followed by a number of countries, such as, USSR (Rs. 10.30 million), Federal Republic of Germany (Rs. 6.70 million), UK (Rs. 4 15 million), Denmark (Rs. 2.60 million), Czechoslovakia (Rs. 3.15 million), Canada (Rs. 2.25 million), Kuwait (Rs. 2.05 million) and Lebanon (Rs. 2 million). Norway, Poland, Sweden, Italy and Malaysia were significant among other buyers. The export range during these years included artware of copper, brass and bronze.

SYNTHETIC DYESTUFF EXPORTS IMPROVE

Growing popularity of Indian synthetic organic dyestuff in the overseas markets was once again proved when the exports earned foreign exchange at a value of Rs. 46.45 million during the first three quarters of 1973-74 (April-December 1973), outstripping the export value secured during the full year of 1972-73 at Rs. 45.25 million. During 1971-72, the exports were only Rs. 24.80 million. The exports during April-December 1972 (during first three quarters of 1972-73) were of the order of Rs. 36.20 million.

In the first three quarters of 1973-74, a number of categories of dyestuff were supplied overseas. Amongst these, direct dyes and sulphur dyes constituted the most popular category overseas which netted Rs. 15 million against Rs. 11.25 million during the full year of 1972-73. USA, UK, Netherlands, Iran, Thailand, Indonesia, Hong Kong, Switzerland, Japan and Singapore were the principal destinations during the period while Netherlands, USA, Iran, Japan, Singapore and Arab Republic of Egypt were leading markets in 1972-73.

The next best category of dyestuff active in exports during the period under review was that of vat dyes. It brought in Rs. 8.85 million, nearly equivalent to what was earned during the full year of 1972-73 (Rs. 8.90 million). A wide variety of vat dyes were supplied abroad in this category. USA, Switzerland, Argentina, Thailand and UK were the prominent buyers during April-December 1973 while USA, Arab Republic of Egypt, UK, Nepal and Argentina were the main markets during 1972-73.

Lake solvent dyes (organic pigments) was yet one more category active in exports during the period at Rs. 6.75 million while in 1972-73 the exports were at Rs. 7.92 million. In April-December 1973, USSR, USA, Federal Republic of Germany, Hong Kong, Brazil and Japan were the prominent importers while during 1972-73, USA, Federal Republic of Germany, Hong Kong, USSR, Argentina and Arab Republic of Egypt were the principal markets.

Reactive dyes and azoic dyes which earned Rs. 6.10 million (1972-73) secured the same volume of foreign exchange during the period of review. A comprehensive range of reactive dyes and azoic dyes were supplied abroad in this category. During the period, Hong Kong, Brazil, Burma, Indonesia, Netherlands, USA, Hungary, Thailand and Singapore were the principal destinations while in 1972-73, Japan, Arab Republic of Egypt, Federal Republic of Germany, Hong Kong, USA and UK were the main markets.

Besides these principal categories, basic dyes (Rs. 4.62 million), acid dyes (Rs. 2.88 million), disperse dyes (Rs. 0.25 million), mordant dyes and other organic synthetic dyestuff were the other categories active in export trade.

The Indian dyestuff industry is presently enganged in diversification of its production range. A wide variety of dyestuffs that were being imported into India till recently are now being produced indigenously. The industry's production of two important varieties of dyestuff - Naphthol and vat dyes was estimated at 1236 tonnes and 1247 tonnes respectively during 1973 as against 1234 tonnes and 1217 tonnes in the preceding year. During the two years, 5 units were engaged in the production of naphthol and 7 units in vat dyes.

In all, there were 21 units engaged in the production of dyestuff and dye-intermediates in the orgainsed sector during 1973. The overall production of the industry during the year was higher than that in the preceding year, notwithstanding higher prices of various dye-intermediates at home as well as in markets overseas owing to world wide shortage. In 1973, some dye-intermediates, such as, O-toluddine, dianisidine and ortho chloro para-nitro aniline were produced indigenously.

EXPORT TREND IN HANDICRAFTS

As a result of the various developmental and export promotion efforts, the exports of handicraft items in recent years have shown a constant uptrend barring 1970-71 and 1971-72. The export figures since 1967-68 are as follows :

Year	Export (value in Rs. million)	Percentage rise or fall over previous year
1967-68	222	+ 25%
1968-69	292	+ 32%
1969-70	404	+ 40%
1970-71	375	(—) 7%
1971-72	382	+ 2%
1972-73	518	+ 21%
1973-74 (provisional)	603	+ 16%

The major items exported during 1973-74 were woollen carpets (Rs. 235 million), art metalwares (Rs. 106 million), wood wares (Rs. 57 million), hand-printed textiles and scarves (Rs. 49 million), imitation jewellery (Rs. 23 million), zari goods (Rs. 10 million), carpets, rugs etc. of cotton (Rs. 14 million), embroidered goods (Rs. 24 million), shawls as artware (Rs. 3 million) and ivory products (Rs. 3 million).

The major markets for Indian handicrafts are the developed countries with their substantial purchasing power. The most important markets in order of importance are the USA, West Germany, UK, Japan, USSR, Australia and Canada. West Germany is the leading buyer for carpets and USA occupies that position for practically all other items. Other important countries where Indian Handicrafts are exported are Switzerlands, Netherlands, France, Singapore, Belgium, Italy and Saudi Arabia.

During the Fifth Five Year Plan, the effort would be to raise the exports in each category to attain a level of Rs. 1100 per annum.

India has been famous for its handicrafits for ages. Indian handicrafts include a large number of crafts, the major among which are hand-made woollen carpets, druggets, numdahs, art metal-wares, artistic wood carving including screens and other pieces of furniture, handprinted textiles, shawls and scarves, pottery, leather, bamboo and canewares and stonewares including marble and alabaster.

Each craft is backed by centuries of experience and skill. Indian craftsmen working quietly in the remotest parts of the country are capable of producing and are, in fact, producing excellent pieces of handicrafts which have for long been admired at home and abroad.

The production of handicrafts in India has been estimated at about Rs. 4000 million per annum. As a result of various developmental and export promotional efforts made by the Government, this level is expected to reach about Rs. 6000 million by the end of the 5th Plan period, registering an increase of 50 per cent. All India Handicrafts Board which is the Government Agency, entrusted with the development of Indian handicrafts, renders services to the Handicraft sector in technical development of improved methods of manufacture and supply of improved tools and equipment, research and evolution of better designs, training in skill, designs and marketing and exhibitions and display of handicraft items.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

REFRIGERATION AND AIRCONDITIONING

A SPOTLIGHT

Airconditioning and refrigeration technology in India has come of age. The technical expertise in the field has enabled India not only to meet its own domestic demand but also to spare surplus for overseas supply. The industry undertakes manufacture of different varieties of refrigerators which include domestic refrigerators, commercial refrigerators, deep freezers, milk coolers and flake ice plants. The industry also manufactures many types of water coolers. The industry, in fact, is marching rapidly to achieve the goal of self-sufficiency in this line of manufacture. Complete self-sufficiency has been achieved in the area of refrigeration equipment for cold storage, ice plants, fish storage and central airconditioning plants for multi-storage buildings, offices and industrial units. All these items are being manufactured with wholly indigenous equipment.

The production of industrial refrigeration equipment is included in the priority sector while domestic refrigerators and water coolers are included in non-priority sector.

Today, there are 19 units engaged in the manufacture of industrial airconditioning, refrigeration and air-control equipment and their installed capacity in terms of value is of the order of Rs. 252 million (1973). The production during 1973 was of the order of Rs. 115 million. The installed capacity of 175,000 numbers in the field of domestic refrigerators was spread over the 6 units engaged in the line and the combined production of these units was 110,000 numbers valued at Rs. 135 million. The production during the year under review, in fact, registered significant increase as compared to the production of the same number of units at 92,300 numbers in 1972. Room air coolers is yet more significant line of manufacture, the production of which during 1973 was 22,000 numbers valued at Rs. 55 million. The installed capacity in this field is placed at 44,780 numbers. The production during 1973, however, suffered marginal setback owing to some bottlenecks at production level in one of the manufacturing concerns. In the preceding year, the production was 25,130 numbers. The qualitiative standard of these items can be compared favourably with those manufactured in any of the developed countries abroad. The last two decades have witnessed the rapid growth of this sector.

The airconditioning and refrigeration industry also achieved significant progress in the manufacture of centrifugal packed chillers. The capacity of a single machine is approximately 515 tonnes of airconditioning. These machines are expected to cater to the needs of large industrial sector, multistoreyed buildings and hotels. Already, letters of intent were issued to two parties for the manufacture of chillers. When the firm commences regular production on commercial scale, India is expected not only to become self-sufficient in this field but would also export the equipment to other countries.

The industry is also making significant progress in the manufacture of sealed compressors by adding various ranges suitable for end-uses like freezers, room airconditioners (2 tonnes and 2½ tonnes capacity), water coolers and commercial refrigerators. It is expected that compressors for such specialised applications would be available in the country in the near future.

In the area of room airconditioners, open licensing policy is followed by the Indian Government but foreign collaboration is not permitted and imports are banned. The import content in the manufacture is hardly 5 per cent and is expected to go down gradually. By the end of 1973-74, the total capacity is likely to go up to 36,000 numbers from the present 32,180 numbers. The demand by 1973-74 is expected to be of the order of 27,000 numbers.

In some areas of manufacture, such as, centrifugal compressors, low temperature freezers, transport refrigeation equipment and for other specialised equipment, technical collaboration is permitted.

Apart from meeting the domestic requirements, the airconditioning and refrigeration sector has come to contribute substantially to India's foreign exchange earning. During 1972-73, the export value of the equipment and accessories in the line was of the order of nearly Rs. 13 million.

Airconditioning machinery secured Rs. 3.75 million while parts and accessories brought in Rs. 1.72 million. Poland was the largest buyer for airconditioning machinery at over Rs. 1.50 million, followed by Singapore at Rs. 0.40 million. Malaysia, Hungary and Dubai were prominent among other buyers. About one and half a dozen countries bought parts and accessories during the year, amongst which Singapore, Malaysia, Poland and Muscat were significant.

Complete domestic refrigerators earned Rs. 2.82 million and these were mainly imported by Poland at a value of over Rs. 2.60 million. Dubai, Mauritius and Nigeria were other significant purchasers. For refrigerator parts which brought in Rs. 0.20 million, Poland was again the principal importer, followed by Sudan and Kuwait.

Additionally, non-electrical refrigerators and parts secured Rs. 1.38 million while air coolers earned Rs. 1.20 million. Kuwait constituted the leading importer of refrigerators and parts while Kuwait, Dubai and Singapore were the principal importers of air coolers. Ice making machinery and other refrigerators and parts were also active in the export trade during the year.

The combined export target for airconditioners, refrigerators and water coolers has been placed at Rs. 15 million for the year 1973-74.

INDIA'S LARGEST HYDRO-SET

A 75,000 KW Hydro set (Kaplan), one of the world's largest and highest set of its type, designed and manufactured by the Bharat Heavy Electricals factory, Bhopal has been successfully commissioned at the Ukai Hydro-Electric Station in Gujarat. This power station is the first and the largest Hydro Station in the Gujarat State.

The additional 75,000 KW of electric power to be generated from the BHEL-built Hydro set will be largely used for service in Surat, Baroda and Ahmedabad. This will also help meet, to some extent, the growing demand of power required for the industrialisation programme in Gujarat.

BHEL is also supplying other three Hydro sets, each of 75,000 KW capacity for this power station. These are under various stages of manufacture and erection.

The Ukai Power Station is situated at the toe of the dam across river Tapti. The Ukai dam connects the two mountains–Sahyadri and Satpura.

DEVELOPMENT OF MULTILAYER HIGH PRESSURE VESSEL

M/s. Bharat Heavy Plate and Vessels Ltd. (BHPV), a Government of India enterprise at Visakhapatnam achieved a major breakthrough in the development of multilayer construction technology for the first time in India. BHPV have recently developed a prototype of multilayer High Pressure Vessel in collaboration with a U. S. firm.

The earliest pressure vessel known to have been used was by D. Popin in the year 1681 when he extracted marrow from bones. Frankland built in the year 1855 a laboratory autoclave for withstanding 100 atmospheres pressure. At the beginning of this century, Haber process of making Ammonia had become a commercial proposition calling for pressure vessels which can withstand 100 to 1000 atmospheres. Hydrogenation of coal, methyl alcohol synthesis and urea reactors also called for pressure vessels of 100 to 300 atmospheres. So also, atomic power plants designed for about 200 to 300 atmospheres. The latest technology of manufacture of polyethylene in the modern 'plastics age' need pressure vessels withstanding 1500 atmospheres.

It is easily possible to make a shell out of 50 mm thick plates by cold bending and welding. Perhaps by hot bending and welding it could be possible to make a shell easily upto 4" or 100 mm thickness. At higher thicknesses, several welding problems would also arise and to bend 6" or 150 mm and above plates becomes very difficult and almost impossible. Several high pressure vessels for heavy chemical industries call for vessels with wall thickness over 150 mm or 6". These may be as heavy as 150 to 600 tonnes. These limitations call for a new thinking or approach for construction of high pressure and heavy wall vessels.

High pressure vessels are made by forged construction, autofrettage, shrink fitting of shells, i.e., multi-wall construction, Collayer ribbon construction and Multilayer construction.

The manufacturing process of BHPV involves wrapping several layers of 6 mm sheets in two or more segments over an inner shell usually made of 12 mm thick material of suitable and appropriate steel. The several layers comprising of segments are welded and the weld shrinkage introduces compressive stress in the inner layers which on actual operation gives uniform stress distribution and allows to work with higher stress value.

BHPV were able to successfully absorb the design, manufacturing and inspection technology involved in the production of high pressure vessels with multilayer construction. They have in the last few months made a prototype model of 890 mm I.D., 2400 mm length tangent to tangent line and 78 mm thickness. This vessel, designed for a design pressure of 250 kg CM^2 and hydraulic test pressure of 325 kg/CM^2, was successfully tested to destruction. This could only be destructed at an internal pressure of 940 kg/CM^2 as against an anticipated bursting pressure of 788 kg/CM^2 calculated over minimum ultimate tensile strength. This proves the absolute safety built in the multilayer construction.

The special advantages of multilayer construction are a) The inner shell if required can be made out of corrosion resistance material with low cost. (b) The 6 mm layer material (made from the same specification of materials) gives better mechanical properties through-out the section). (c) It gives better notch toughness properties than the solid wall vessels. (d) In case of any failure, this vessel fails with ductile fracture and not brittle fracture; so it is better for safety of personnel. (e) The pre-compression of inner surface gives better distribution of stresses so it is possible to work with higher stress value resulting in lower wall thickness. (f) The vent hole through the outer layer permits the diffused hydrogen to escape in case of hydrogen service and also it gives an indication to repair the inner shell when full vessel is structurally sound by showing leakage through the vent hole. (g The facilities for field assembly without stress relieving reduces the trouble for large shipment and site erection. (h) Because of thin plate, the metallurgy does not call for post weld heat treatment. (i) The fabrication method permits close control of vessel tolerance to facilitate insertion of internals. (j) Because of thin plate, the construction cost is comparatively less.

INDIAN SILK INDUSTRY

Supremacy of Indian natural silk has remained unaffected at home as well as in overseas markets notwithstanding the development of man-made fibre industry in the world. The industry in India, on the contarary, has now come to a 'take off' stage with the backing of scientific know-how, developed over the years. While the world production of artificial fibres is witnessing a downward trend in recent years with a gradual increase in their costs of production to uneconomic levels, the Indian silk industry is consistently registering improved production at the most economic level every year. The industry's foreign exchange earning is also growing every year because of rising overseas demand for natural fibre, particularly, from the fashion centres of the world. In the wake of the present oil crisis, when the man-made fibre, industry, everywhere is experiencing acute energy shortage, Indian silk industry is marching ahead rapidly as its energy consumption continues to be the lowest in comparison to that required for synthetic fibres.

World's production of silk is more or less stagnant at 40,000 tonnes while India's production is going up steadily. For instance, the production which was only 1.24 million kgs in 1949 improved to 1.66 million kgs in 1961 and rose sharply to the level of 2.61 million kgs in 1972 to improve further to an estimated 2.80 million kgs in the following year.

Of the total production during 1972-73, mulberry silk accounted for 2.25 million kgs and and non-mulberry silk at 0.55 million kgs as against 2.12 million kgs and 0.50 million kgs respectively in 1972. During 1973, the total area under mulberry silk was estimated at 126,183 hectares as against 115,774 hectares in 1972, 64,247 hectares in 1961 and 47,200 hectares in 1947.

The present trend of silk producing countries is towards increasing production and exploring new areas for the purpose. In these circumstances, Indian silk industry has to play a vital role as a number of silk consuming countries are looking towards India for meeting their growing requirements of natural silk. Already, the Indian silk sector, has taken some steps in the direction of providing requisite inputs for the development of the industry.

Being highly labour intensive, with a vast potential for rural employment, the sericulture sector of India's silk industry is poised for active major breakthrough in the field of production of quality natural silk, not only for home consumption but for satisfying the growing needs of overseas consumers. This agro-industry has the unique feature of survival, notwithstanding the natural constraints, such as, failure of monsoon and recurring droughts, as mulberry is typically a very hard plant which ensures the sericulturist to have modest crop of cocoons despite the natural odds. Secondly, in multivoltine areas, the crops of cocoons can be harvested 5 to 6 times within an year which even make up the losses suffered by general crop failures and tones to economy of the areas where sericulture is practiced.

The process of development of the silk industry in India on scientific lines commenced only in the post-independence period. Despite severe competition from synthetic fibres, the industry during the period of the last two decades, sustained its growth because of low investment and progressive reduction of its reliance on imports. During 1972-73, India's silk imports totalled only 38,000 kgs as compared to 117,000 kgs in 1949.

The Planning Commission has outlined the strategy for development of sericulture during the Fifth Plan, envisaging production target for mulberry silk at 3.50 million kgs, tasar silk at 0.65 million kgs, eri silk at 0.38 million kgs and muga silk at 0.12 million kgs.

Alongside progress in production, the industry has improved its performance in the field of exports too. From just a modest figure of Rs. 3.70 million in 1949 the exports jumped to a level or nearly Rs. 115 million in 1973. In the preceding year, the export earning was of the order of Rs. 76 million.

India-manufactured silk products are sought after by over 50 countries abroad every year. Among these, European Economic Community countries are the prominent importers and among the Asian countries, Japan is significant. The export target for 1973-74 has been placed at Rs. 120 million. The target seems to be within the reach as the exports during the first ten months of 1973-74 (April 1973 January 1974) secured foreign exchange in the neighbourhood of Rs. 100 million as compared to only Rs. 65.50 million in the corresponding period of 1972-73. During April-1973-January 1974, mulberry silk goods alone secured the bulk of earning at Rs. 83 million while the share of tasar silk amounted to Rs. 16.30 million. A wide variety of items in the mulberry sector were exported during the period which included dress material, sarees, scarves, readymade garments and ties. These were mainly bought by Federal Republic of Germany, France, UK, USA, Japan, Switzerland, Italy, Sweden, Denmark and Poland. Tasar goods were purchased mainly by Federal Republic of Germany, USA and Japan.

Despite the fact that the sericulture industry resorted to research activities only recently, the progress made in the field is indeed noteworthy. The research aspect has been completely centralised under the Central Silk Board since 1961. There are already two research institutions for mulberry sector and one for tasar sector, located at Mysore and Berhampore and at Ranchi (Bihar) respectively. Besides, some sub-stations are located at Imphal (Manipur), Bhimtal (UP) and Batote (Jammu and Kashmir). In Muga and eri sector, a research station at Titabar in Assam is already functioning. A univelatine research sub-station has been started at Majra in UP recently. Apart from these, the Silk Board also runs three basic seed farms at Pampore (Kashmir), Coonoor (Tamil Nadu) and Lakha in Madhya Pradesh.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PROCESS FOR PURIFICATION OF CATECHOL

A simple process for purification of catechol which is used in the manufacture of t-butylcatechol (an important anti oxident) and as an intermediate for some drugs has been developed by the National Chemical Laboratory (NCL), Poona. The process can produce catechol at a competetive price. Catechol is synthesized from o-chlorophenol or o-dichlorobenzene.

The total requirement of catechol is not available. For p-tert-butylcatechol about 15-20 tonnes per annum of catechol would be needed. Other end-uses of catechol will develop once its production is taken up in the country.

The NCL process consists of treating the polyvalent for phenols catechol rich faction with a solvent, such as, toluene or benzene under specified conditions and crystallizing pure catechol from the mixture.

The NCL process has been worked out on 7-8 kg of catechol per batch.

The product prepared by the NCL conforms to the specifications for imported technical catechol. The main items of raw materials required for the process are polyvalent phenols (catechol rich out) and benzene (make up).

PROCESS FOR VITAMIN B6 DEVELOPED

The National Chemical Laboratory (NCL), Poona has successfully developed a process for the manufacture of vitamin B_6 (pyridoxine hydrochloride) which is an important drug used for certain types of anaemea, nausea and nervons disorders. It is also used in conjunction with the other vitamins of B group.

At present, the drug is not manufactured in India. During 1972-73, over 15.5 tonnes of the drug were imported at a value of Rs. 1.40 million mainly from Netherlands, Switzerland, Yugoslavia, German Federal Republic, Hungary and Japan.

Starting from paraldehyde, the NCL process involves the followings steps : dl-alanine–ethyl-N-formylalaninate–4-methyl-5-ethoxy oxazole–vitamin B_6. The product by the NCL proccess conforms to standards.

The main items of raw materials required for the manufacture of vitamin B_6 are paraldehyde, ammonium bicarbonate, sodium cyanide, sodium hydroxide, acetic acid, formamide, phosphorous pentoxide, 2-butene 1, 4, diol phraformaldebyde, conc. HCL, active carbon, HCE, gas, ethanol, benzene, ethylene dichloride, ethyl ether and acetone. Most of the raw materials are available indigenously.

Parties interested in commercial exploitation of the process may get in touch with the Secretary, National Research Development Corporation of India, 61, Ring Road, Lajpat Nagar III, New Delhi-24.

EPOXY FIELD COIL INSULATION FOR TRACTION MACHINES

There has been an ever increasing demand on the traction machines to provide increased output and to give trouble-free performance under the worst possible operating conditions - such as, dust, dirt, diesel oil and water, continuous vibrations and mechanical shock loads, extreme variation in ambient temperature combined with high humidity etc.

To meet these requiremements and to further improve their service performance, various design modifications have already been effected on most of the traction machines and the first 1500 V dc EMU traction motor fitted with epoxy field coils has been developed by M/s. Bharat Heavy Electricals Limited (BHEL), Bhopal and has been successfully tested recently.

The solventless epoxy resin used in this type of insulation system provides a very high bonding strength and results in a completely void-free and homogeneous coil with vastly improved heat conducting properties. Such coils are then mounted on poles leaving a suitable gap which is filled up later with an epoxy resin. The whole assembly is finally cured under pressure using a suitable fixture, resulting in a single unit which can then be fitted on to the traction motor magnet frame.

Although expoxies are class 'F' insulating materials, in the prototype dc EMU traction motor fitted with epoxy insulated coils, a substantial reduction in temperature rise has been obtained as compared to that with the present class 'H' insulation. The tests on this type of motor have established that a 15 to 20 per cent increase in field coil ratings can be obtained by the use of epoxy insulation as long as a corresponding increase in the armature rating can also be achieved.

In addition to the increased ratings, considerably improved service performance can be expected from epoxy field coils in traction service, as moisture, dust, dirt and even flood water entering the motor will not affect the coils in service. The epoxy materials used for this development have been imported.

On the basis of the development work so far, BHEL, Bhopal is now planning to introduce epoxy insulated field coils on one type of the traction motors on mass production basis and would be very keen for total changeover on all the traction machines immediately. But as the shelf life of the imported material is restricted, its use on large scale is not feasible at present. There are indications that the manufacture of samica paper, as well as suitable epoxy resin/varnishes will be established indigenously in near future and a total cnangeover can then be effected.

PROCESS FOR DEFLUORIDATION OF WATER

The Central Public Health Engineering Research Institute (CPHERI), Nagpur, has developed a process for defluoridation of waters, known as Nalgonda process.

The process developed by CPHERI consists in adding sodium aluminate and alum to raw water, mixing for 10 minutes and allowing the mixture to settle for an hour. The supernatant is essentially clear and the fluoride is reduced to less than 1 mg/litre, the permissive limit.

Domestic treatment is further simplified to enable the individual to adapt the process to his requirements. Any container or 120-60 litres capacity is suitable for this purpose. A tap 3-5 cm above the bottom of the container is useful to withdraw the treated water but is not essential. The raw water taken in the container is mixed with adequate amounts of sodium aluminate and alum. The quantity required depends on dissolved solids, alkalinity and fluorids in the raw water.

The cost of treatment of one cubic meter of water with 400 mg/litre alkalinity (as $CaCo_3$) is Re. 0.14 at 2.4 mg F/litre and Re. 0.52 at 16.4 mg F/litre. At the rate of 5 litres per capita per day consumption, the annual cost of treatment per head works out to be between Re. 0.26 and Re. 0.95. Information regarding the chemicals doses can be obtained from the CPHERI by furnishing data on dissolved solids, alkalinity and fluorides.

INDIA'S IMPORTS OF PRINCIPAL COMMODITIES

(Rs. in million)

Commodities	1971-72	1972-73	April — December	
			1972-73	1973-74
Cereals	1312	808	217	2816
Milk and Cream	190	179	134	84
Fruits and Vegetables	378	532	368	322
Pulp and Waste Paper	96	99	82	79
Cotton raw Excl. Linters	1134	900	763	479
Wool Raw	142	117	96	138
Jute	—	11	6	121
Fertilizer and Crude Minerals	364	373	259	304
Petroleum and Products	1941	2040	1493	2796
Chemical Elements and Compounds	718	889	592	731
Dyeing, Tanning and Colouring Materials	84	91	67	70
Medicinal and Pharmaceutical Products	266	229	168	186
Fertilliser, Manufactured (Chemical Fertilisers)	812	899	474	946
Plastic Materials	92	115	83	106
Paper, Paper Boards and Manufactures thereof	349	307	184	196
Iron & Steel	2376	2171	1569	1603
Copper	512	486	368	516
Zinc	177	210	163	177
Lead	78	104	75	81
Tin	49	68	48	78
Nickel	64	75	56	43
Hand Tools and Machine Tools	32	33	23	30
Machinery other than Electric	2709	2850	2096	2912
Electric Machinery and Appliances	1051	1240	850	805
Transport Equipment	946	871	546	609
Instruments, Apparatus and Appliances, Films, Watches etc.	241	262	193	205
Grand Total (Incl. Other Items)	18,245	17,967	12,367	18,590

Source : Director General of Commercial Intelligence and Statistics, Calcutta.

INDIAN LAC

Lac is a natural resin of insect origin and is commercially important as a versatile raw material useful for a variety of purposes. It is the secretion of certain species of insects, encouraged to grow on specific 'host' trees and is collected as encrustations on the twigs. Lac and its products have a hoary past. They have been used for diverse purposes from time immemorial as a medicine, as a resin, as a cosmetic and for polishing and lacquering of wood.

Lac crop is collected by cutting down the lac bearing twigs of the "hosts" either weeks before larval emergence, when it is known as art, or after, when it is known as phunki. Lac encrustations are separated from the twigs by either breaking off by hand or scrapping with a knife or sickle. Lac, thus gathered, is known as *sticklac* and it is in this form that cultivators bring it to the market for sale to manufacturers.

Sticklac contains, in addition to lac resin and its associated spirit soluble dye erythrolaccion and wax,certain water soluble components which include a dye Laccaic acid, sugars, albuminous matter. In order to purify sticklac, the first step is to crush it coarsely (in slow speed mills) and clean it by sieving out the dust and sand on a fine sieve and then to wash the residue with water. During this processing, not only the soluble constituents are removed but also such incidental impurities as dead insects, barks, twigs, wood chips and other materials that float in the water. Portions of sticklac which sink to the bottom of the washing tub are again cleaned and sieved. The product is *seedlac*. As working of sticklac into seedlac is an important operation in the refining of lac, technicians and manufacturers have devised and patented a number of processes for this purpose. Seedlac which is only a semi-refined product, still contains some amount (3 to 7 per cent) of impurities including sand, wood-chips etc. It is, therefore, further refined in one of the two ways, viz. (i) by a process of hot filtration, i. e. by heating the material and straining the fused mass through cloth to free it from infusible impurities or (ii) by solvent extraction, i. e. by dissolving it in alcohol, filtering free from insoluble impurities and distilling off the solvent to recover the dissolved lac. In hot filtration method the refined lac is first stretched into thin sheets. When cooled, it is broken up into smaller flakes, the familiar *shellac* of commerce.

Some manufacturers instead of stretching refined lac into thin sheets adopt another process. The well mixed molten lac is dropped in small quantities on smooth metal sheets to form small discs or buttons of 6 to 7.5 cm in diameter. This is the *button lac*.

The dirty residues left after filteration are refined by solvent extraction to make *garnet* lac which finds use in some cheaper applications where colour is not of much consequence.

Under the alternative method of refining crude lac by the solvent process, seedlac is extracted either with a cold or hot solvent usually industrial alcohol, by agitation and the insoluble residue allowed to settle. The solution is then filtered and the solvent distilled off. The residual molten lac is then drawn into sheets in suitable machines. The solvent, after rectification, is re-used in subsequent batches. By the use of hot alcohol, ordinary (wax containing) shellacs are produced while with cold alcohol, especially after refrigeration, dewaxed shellacs result as lac wax is insoluble in cold alcohol. If decolourisation of the refined lac is also desired, this is effected by treating the alcoholic extract with decolourising cabon before distilling of the solvent.

The pale yellow to orange-red colour of seedlac, shellac or buttonlac is due to the presence in them of a spirit-soluble dye, erythrolaccin. Manufacture of colourless lac necessitates elimination of this dye or its transformation into a colourless body. Elimination can be effected by physical methods with the aid of absorbents giving light coloured lacs (decolourised lacs), while transformation into a colourless material can be achieved only through chemical treatment (oxidation or reduction). Reductive processes using sulphurous acid or hydrosulphite give greenish products. Oxidative bleaching with chlorine gives a practically colourless lac. This is called bleached lac. The chief raw material for bleached lacs is shellac or seed lac.

Annual production of lac in India, at present, is of the order of 30,000 tonnes per annum (average during 1961-71), which is considerably less than the average production of 45,000 tonnes during 1956-61. There are large variations from year to year depending on the climatic conditions at the time of the crop and the health of the host trees.

Shellac is used in surprising places, for example, to strengthen and preserve newly unearthed fossil remains before lifting them for examination. Shellac is used in fireworks, for stiffening the toes of shoes, for shoe insoles, for the preservation of fruits (mangoes and bananas) and eggs; a dab of strong shellac varnish on small nuts and bolts, for example, in wireless sets, locks them. The number of such minor roles in which shellac is employed is legion.

Applications of shellac are based on one or more of its properties. Shellac produces smooth, decorative and durable films from its alcoholic solutions which dry rapidly. These films show excellent adhesion to a wide variety of surfaces, possess high gloss, hardness, strength and resilience. They are also resistant to the action of ultra-violet rays. Shellac in alkaline solutions gives good films which possess high adhesive power. Shellac is an excellent bonding material with low thermal conductivity and a very small coefficient of expansion. It has notable electrical properties, a high di-electric strength, a low dielectric constant, and is remarkable for its freedom from tracking. Its thermal plasticity and ready fusibility, coupled with its ability to obsorb large amount of fillers are valuable for the moulding industry. Shellac is nontoxic.

Some of the main applications of shellac, which vary in importance, are : Spirit varnishes—furniture finishes, french polish, sealers, undercoats and enamels; glazes for confectionery and tablets aqueous varnishes for wood, paper and leathers; flexographic and other shellac-based inks; hair lacquers and cosmetics; general moulding compositions; grinding wheels, gramophone records and sealing wax; rubber compounding; electrical insulation including moulded insulators, micanite, laminated paper; insulating varnishes; adhesives and cements and hat proofing.

Lac is no new comer in the overseas market. In the early 19th century Indian lac dye had much demand in the West. The demand for the lac resin began to increase steadily from the early part of the present century in the wake of industrial revolution in Europe. Chemists have had to work hard to discover the versatile physical and chemical nature of lac and put it to mumerous applications in modern industry.

Exports of lac in all its forms during 1961-71 averaged 16,000 tonnes per annum valued at about Rs. 50 million. More than two-thirds of it (about 11,000 tonnes) was in the form of shellac. About one fourth (around 4000 tonnes) was seed lac. Button and garnet lac averaged about 1250 tonnes per annum. In terms of value, shellac exports account for over 75 per cent, seed lac for 16 per cent, button lac and garnet lac for 6.5 per cent of the total lac exports.

Exports of Indian lac are being effected to over eighty countries of the world. The major destinations for Indian lac are USA, USSR, UK, Federal Republic of Germany Australia, Japan, France and Brazil which together account for over 65 per cent of exports. The other notable countries buying Indian lac are Italy, Singapore, Argentina, Formosa, Bulgaria, Rumania, Mexico, Poland, Philippines, Netherlands, ARE, Indonesia, Spain, Canada, Hungary and Sweden.

The prices per unit were on the low side during the period 1961-72. In 1971-72, 9386 tonnes of shellac were exported for a value of Rs. 50 million and other varieties of lac fetched Rs. 16 million for 4288 tonnes. The prices have improved considerably since then. In 1972-73, exports of all varieties of lac were 7564 tonnes valued at Rs. 61 million. In 1973-74, the exports of Indian lac during the first three quarters (April-December 1973) were 4254 tonnes valued at Rs. 96 million. As in earlier years, the bulk of the exports was in the form of shellac - handmade shellac 1064 tonnes and machine made shellac 1885 tonnes valued at Rs. 23 million and Rs. 47 million respectively. Next was seed lac which brought in Rs. 16 million for 868 tonnes. Exports of button lac and gernet lac during the period were 435 tonnes valued at Rs. 8.4 million.

UK was the major market for Indian lac and purchased during April-December 1973, 661 tonnes valued at Rs. 14 million, USA accounted for 438 tonnes valued at Rs. 11 millions and Federal Republic of Germany 583 tonnes at Rs. 11 million. Exports to USSR during the same period were 237 tonnes valued at Rs. 7 million. 349 tonnes of lac valued at Rs. 7 million were exported to Netherlands. Australian purchases were 140 tonnes at Rs. 3.5 million and those of Brazil 214 tonnes at Rs. 5 million. Singapore bought 324 tonnes for Rs. 8 million during this period.

Exports of lac during the month of January 1974 stood at 500 tonnes valued at Rs. 18 million bringing the total exports during the first ten months of 1973-74 to about 4800 tonnes and the total value to Rs. 114 million. Thus, the foreign exchange earning from lac may well be around Rs. 150 million during the whole year of 1973-74. □

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ENCOURAGING TREND IN ENGINEERING EXPORTS

India's engineering sector is gradually emerging as an important foreign exchange spinner in world markets. The export earning of the sector rose to Rs. 1505 million in 1972-73 as compared to Rs. 1260.45 million in 1971-72. During the first eleven months of 1973-74, these exports totalled about Rs. 1490 million, according to the Engineering Export Promotion Council, Calcutta.

In tune with this trend, M/s. Tata Engineering and Locomotive Company, Bombay House, 24, Bruce Street, Fort, Bombay, one of the units in the line, were able to improve their foreign exchange earning to Rs. 72.90 million in 1973-74 from Rs. 68.80 million in the preceding year. Turnover during the year was also up at Rs. 1629 million compared to Rs. 1565 million in 1972-73.

In the broad range of various products including locomotives and locomotive boilers, commercial vehicles, excavators and steel castings of the firm, commercial vehicles occupy a significant position in the context of their exports. The firm, in fact, is reputed to be the largest exporter of commercial vehicles, accounting for nearly 86 per cent of India's total vehicle exports in 1973-74. In the same year, the Company turned out 22,559 commercial vehicles as compared with 21,779 in the preceding year. The production included 1155 special purpose vehicles as against 968 in 1972-73.

In the year under review, the Excavator Division of the Company produced 72 excavators. The production in the preceding year was more at 91 numbers.

Besides the operations of the Automobile Division and the Excavator Division, the Press Tool Division of the Company manufactured in 1973-74 a variety of intricate dies and tools required for the Company's replacement and expansion projects. Similarly, the Machine Tool Division produced a range of special machine tools needed for import substitution and expansion. The firm expects to introduce shortly a new semi-forward truck model which has already been tooled up fully at its Poona factory. Its new fully automatic foundry at Poona is also likely to be ready in the near future.

PAINTS AND VARNISHES IN EXPORT TRADE

Though of recent origin, the paints and varnishes industry in India has made significant strides in the export field. The country's export earning of pigments, paints, varnishes and related materials rose sharply to Rs. 45.57 million in 1972-73 from only Rs. 28.45 million in the preceding year, registering an increase of about 60 per cent. During the first three quarters of 1973-74, the export value was Rs. 20 million.

Prepared paints, enamels, lacquers, varnishes and artist-colours constituted the major category of export growth during 1972-73. These secured foreign exchange to the tune of Rs. 42.05 million. Of this, synthetic enamels alone fetched as much as Rs. 17.75 million. U.S.S.R. was the largest single buying market which bought 2.78 million kgs. valued at Rs. 15.90 million. A.R.E., Iran, Abu Dhabi, Bangladesh and Fiji Islands were prominent among other buyers. With U.S.S.R., again occupying the leading position having imported the bulk of supplies amounting to 1.62 million kgs. valued at Rs. 10.42 million, varnishes earned Rs. 11.10 million in foreign exchange. In terms of quantity, 1.85 million kgs. were supplied overseas. Among other markets, Nepal with an intake worth Rs. 0.50 million was an important buyer. Next to varnishes, prepared inorganic pigments was the item of sizeable overseas intake during the year. It brought in Rs. 2.80 million. U.S A., followed by U.S.S.R., Hong Kong, Netherlands, Japan and Philippines, was the principal market. Among other items, ready mixed paints (Rs. 1.20 million), prepared organic dyestuff pigment dry (Rs. 1.30 million), artist's colours (Rs. 1.28 million) and other paints (Rs. 5.10 million) were prominent in export trade in the category of prepared paints, enamels, lacquers' varnishes and artists' colours.

In addition to the above, colouring materials and printing materials and printing inks netted Rs. 2.20 million and Rs. 1.33 million respectively. In the former category, chrome pigments, ultramarine blue, iron blues and other inorganic colouring materials were mainly supplied to U.S.S.R., Bangladesh, Ghana, Arab Republic of Egypt and Nepal. In the latter category, printers' colours, lithographic ink jelly etc. were imported by Bangladesh, Thailand, Iraq and Nigeria.

Contributing the export endeavour in the line, M/s. Bombay Paints and Allied Products, Corridor Road, Gavanpada Village, Chembur, Bombay improved their

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exports to Rs. 1.20 million in 1973 against Rs. 0 88 million in the preceding year.

The production profile of the Company includes various paints, varnishes, distempers, printing inks, colours and enamels and marine paints. Their total turnover was of the order of Rs. 28.27 million in 1973 compared to Rs. 33.23 million in 1972.

In the organised sector, as against the installed capacity of 117,300 tonnes for paints, enamels and varnishes, the actual production of 16 units engaged in the line was of the order of 69,000 tonnes (1972). The demand likely to have materialised by 1973-74 is estimated at 140,000 tonnes. Additional capacity recently approved is of the order of 1350 tonnes. Total capacity likely to have materialised by 1973-74 is estimated at 118,000 tonnes. No foreign collaboration is required for this industry. Of the various paint items, dry distemper, red lead paint, red oxide paint, aluminium paint, bituminous paints, wagon black and paste paints have been exclusively reserved for development in the small scale sector. Rest of the paint items are open for licensing. Among the raw materials required, pigments, synthetic resins, certain solven, and additives are available indigenously. Titanium dioxide a major raw material required by the industry is procured through import. However, M/s. Travancore Titanium Products Ltd. have been permitted for sizeable expansion in their manufacture of titanium dioxide. On completion of this project, the import content of the industry is expected to come down to about 5 per cent.

UPTREND IN EXPORT OF SANITARY FIXTURES

India's exports of sanitary fixtures have been improving in recent years. The export value of the main varieties including sanitary fixtures of copper and its alloys and sink wash basins from ceramic materials and those made from iron and steel nearly doubled to Rs. 6.95 million in 1972-73 from Rs. 3.92 million in the preceding year. Itemwise, sanitary fixtures made from copper and its alloys alone were supplied abroad at a value of Rs. 4.20 million in 1972-73 as compared to Rs. 1.83 million in 1971-72. Sink wash basins made from ceramic material earned about Rs. 2.15 million in foreign exchange in the same year as against Rs. 1.55 million in the preceding year while those made from iron and steel secured over Rs. 0.60 million as against Rs. 0.54 million.

In 1972-73, Poland, USSR, USA, Philippines, Sudan, Sri Lanka, Hungary, Malaysia and Nepal were the principal importing markets for sanitary fixtures made from copper and alloys while Kenya, Nigeria, Nepal, Mauritius, Bangladesh and Belgium were the leading buyers of sink wash basins made from ceramic materials. Sink wash basins of iron and steel were mainly bought by USSR, USA. Kenya and Mauritius. Apart from these major varieties, sanitary fixtures made from alloys of aluminium, zinc and lead were also exported during the year, though on a limited scale.

The export value of these main varieties is expected to be still more in 1973-74. Even during the first three quarters of the year (April-December 1973), the export value totalled Rs. 6.40 million, which was up by Rs. 2.48 million over the export value for the full year of 1971-72 and was short of the performance in 1972-73 (full year) by only Rs. 0.55 million.

Break-up of the total earning during April-December 1973 was: sanitary fixtures made from copper and alloys Rs. 2.35 million; sink wash basins from ceramic materials Rs. 3.30 million and sink wash basins of iron and steel Rs. 0.75 million.

Contributing to the export endeavour in the line, M/s. Hindustan Sanitaryware and Industries Ltd., Bahadurgarh, Distt. Rohtak, Haryana, are reported to have shipped recently a consignment of sanitaryware worth about Rs. 0.80 million to Kenya. This is stated to be the largest single overseas order executed by any single Indian firm in the line.

The firm's total exports amounted to Rs. 1.43 million during 1972-73 and Rs. 1.29 million in 1971-72. Actual production recorded by the firm in these two years was 5575 tonnes and 5002 tonnes respectively.

Production of sanitaryware in India in the organised sector was of the order of 18,500 tonnes in 1973 as against 16,000 tonnes in 1972. Total installed capacity of the 9 units in the line was of the order of 18,170 tonnes in both the years.

BATTERIES AND ACCUMULATORS ON EXPORT STREAM

India-manufactured batteries and accumulators are picking up overseas demand steadily. From Rs. 25.57 million in 1971-72, the exports improved to Rs. 28.40 million in 1972-73.

During the first three quarters of 1973–74, the exports of these products were valued at about Rs. 21.90 million. Of this, flash light and other primary batteries secured foreign exchange to the tune of Rs. 6.25 million while wet-cell primary batteries were supplied abroad at a value of Rs. 0.80 million. Sudan and Nepal were the principal customers, both for flash light batteries and other dry cell primary batteries.

In the same period, acid type accumulators earned Rs. 7.40 million; mainly from USSR, Poland, Abu Dhabi, Kenya and Iraq. Apart from these, other accumulators earned equally well at Rs. 7 million. USSR was the leading buyer, followed by Poland, UK, Kuwait and Bahrein Islands among others.

Contributing to the export endeavour in the line, M/s. Mysore Electro-chemical Works Ltd., Rajajinagar Industrial Suburb, Yeshwantpur, Bangalore have recently secured a contract for supply of traction batteries to USSR at a value of Rs. 2.70 million. The production profile of the firm includes storage batteries for motor vehicles, motor cycles, scooters, tractors, forklifts and for defence purposes.

With 11 units in the line in the organised sector, the production of storage batteries in 1973 in India was of the order of 1.20 million numbers compared to an installed capacity of 1.40 million numbers. In 1972, against an installed capacity of 1.28 million numbers, spread over 7 units, the production totalled 1.10 million numbers.

EXPORT PERFORMANCE AND POTENTIAL

WOOD EXPORTS IMPROVE SIZEABLY

From Rs. 83 million in the first ten months of 1972-73 (April 1972–January 1973), the exports of wood, lumber and cork shot up to Rs. 147 million in the same period of the following year 1973-74 (April 1973-January 1974), registering over 77 per cent increase. The exports even outstripped the export value during the full year of 1972-73 at Rs. 95 million.

Wood in roughly squared form constituted the major category in exports during the period which accounted for the bulk of foreign exchange as much as Rs. 145.40 million. The exports improved to this level from only Rs. 81.50 million in the corresponding period of 1972-73. Besides this, wood shaped or simply worked out, fuelwood and charcoal were also exported during the period.

In the category of wood in rough or roughly squared form, rosewood constituted the principal item having netted alone foreign exchange worth Rs. 129 million (25,697 cubic metres). Japan with an intake valued at Rs. 98 million (16,970 cubic metres) was the leading importer. Italy, the next best importing market, bought worth Rs. 19.15 million (4469 cubic metres), followed by Federal Republic of Germany Rs. 4.23 million (1343 cubic metres) and USA Rs. 3 million (378 cubic metres). Denmark, UK, Hong Kong and Spain were significant among other buyers.

Apart from rosewood, the exports of other items of wood exported in this category were : sandalwood Rs. 4.77 million (280 tonnes), sal wood Rs. 3.43 million (4607 cubic metres), red sanders Rs. 3 million (700 cubic metres) and other hard wood Rs. 1.90 million (2549 cubic metres). Teakwood, walnut wood, benteak, laurel and other sawlogs were also exported in the category.

The export earning of other two categories viz. wood shaped or simply worked and fuelwood and charcoal were insignificant.

EXPORT POSITION IN UNMANUFACTURED TOBACCO

India's export trade in unmanufactured tobacco and tobacco products totalled Rs. 282 million during the first quarter of 1974-75 (April-June 1974), according to the Tobacco Export Promotion Council, Madras.

Of the total export value during the period under review, unmanufactured tobacco accounted for the bulk at Rs. 280.26 million (21,500 tonnes) while the share of tobacco products was only Rs. 1.78 million.

Nearly two dozen countries imported unmanufactured tobacco from India during the period. United Kingdom was the largest buyer, having bought 14,922 tonnes at a value of Rs. 215.65 million accounting for the major portion of Indian supplies. USSR constituted the second best market, next to UK, which bought 1560 tonnes at a cost of Rs. 16.87 million. The third significant market for the tobacco was Irish Republic which purchased 627 tonnes at a value of Rs. 10.36 million. Besides these principal markets, Libya at nearly Rs. 9 million, Japan at Rs. 7.42 million, Czechoslovakia at Rs. 4.56 million, Belgium at Rs. 4.40 million, Arab Republic of Egypt at Rs. 3.90 milion and Indonesia Rs. 2.89 million were other importing destinations.

Among tobacco products exported during the period, cigarettes earned Rs. 0.96 million, hookah tobacco Rs. 0.41 million and bidis Rs. 0.34 million. Snuff, chewing tobacco and scented zarda were also exported during the period.

In the entire preceding year (1973-74), unmanufactured tobacco fetched foreign exchange worth Rs. 642.80 million as against Rs. 610.70 million in 1972-73. Quantumwise 71,243 tonnes against 94,484 tonnes were supplied abroad in the respective years. United Kingdom (26,111 tonnes) at Rs. 294.45 million was the leading buyer during 1973-74, followed by USSR (17,318 tonnes) at Rs. 177.78 million, Bangladesh (10,017 tonnes) at Rs. 57.27 million, Japan (4491 tonnes) at Rs. 48 million and Irish Republic (1998 tonnes) at Rs. 23.96 million.

PRINTED MATTER EXPORTS UP

India-produced printed matter contributes substantially to India's foreign trade. During the first ten months of 1973-74 (April 73 - January 74), the export trade in the line amounted to nearly Rs. 21 million which surpassed the exports in the entire preceding year at Rs. 15 million. During 1971-72 and 1970-71, the exports were of the order of Rs. 17.60 million and Rs. 13.60 million respectively.

A wide variety of printed matter, such as, printed books, printed pamphlets, booklets and brochures, hydrographic maps and charts, newspapers and periodical journals, picture postcard greetings, picture postcards, paper and paperboard labels, plans and drawings unused postage revenue stamps, paper and paperboard calendars, advertising matter, printed posters, printed pictures and photographs, trade catalogues and other printed matter find their way to countries abroad.

In the export range mentioned above, books contribute to the maximum extent to the total foreign exchange earning every year. In April 73-January 74, their exports contributed more than 50 per cent to the total export earning—Rs. 11.50 million in the total export value of Rs. 21 million.

Bangladesh was the largest buyer of Indian books during the period which imported worth Rs. 2.86 million. USA constituted the second best market, having bought worth Rs. 1.59 million, followed by Arab Republic of Egypt at Rs. 0.93 million, UK Rs. 0.91 million, Singapore Rs. 0.88 million, Malaysia Rs. 0.62 million and Sri Lanka Rs. 0.36 million. Among other buyers, Saudi Arabia, Thailand, Nepal, Kenya and Afghanistan were significant.

Newspapers and periodicals were the next best contributors to the total export during the period. These contributed over Rs. 3 million. Of this, the share of journals and periodicals was of the order of Rs. 1.75 million while newspapers secured Rs. 1.33 million.

About three dozen countries imported Indian periodicals and journals during the period amongst which Malaysia (Rs. 0.46 million), United Kingdom (Rs. 0.41 million) and Kenya (Rs. 0.21 million) were the leading buyers while Newspapers were imported by about two and half a dozen countries in which Bangladesh (Rs. 0.61 million), UK (Rs. 0.14 million) and Nepal (Rs. 0.12 million) were significant.

Besides these, printed matter like paper and paperboard calendars earned Rs. 0.90 million, unused postage revenue stamps Rs. 0.68 million, printed advertising matter Rs. 0.16 million, printed pictures and photographs Rs. 0.11 million, picture postcard greetings and cards Rs. 0.90 million and other printed matter Rs. 2.70 million.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

BHEL — GIANT IN HEAVY ELECTRICALS

Bhopal unit of the Bharat Heavy Electricals Limited (BHEL) is the first and the largest factory in India for the manufacture of the entire range of heavy electrical equipment at one place.

Starting from an output valued at Rs. 17.70 million in 1961-62, the output of the factory went up to about Rs. 770 million in the last year—1973-74. The cumulative output till date is valued at about Rs. 3500 million.

Alongside the increase in output, the profit of the factory has also shown an increase from Rs. 50.80 million in 1972-73 to over Rs. 113.10 million in 1973-74.

Power Equipment

The Bhopal unit has already supplied power equipment with a capacity to generate over 1,600 MW, of which over 500 MW has already been commissioned. Some of the projects recently commissioned include Sumbal - Sindh Hydro Power Station in Jammu & Kashmir and Thermal Power Stations at Santaldih and Chandrapura in West Bengal and Bihar, respectively.

Industrialisation

The Bhopal factory has made a substantial contribution in quickening the process of industrialisation at a faster rate. A number of industries, such as, steel, aluminium, paper, rubber, cement, sugar, mining etc. have already been equipped with Bhopal - built electrics.

Contribution to Railways

In the field of Railway electrification and dieselisation, the Bhopal factory's contribution has been significant. Five out of every six suburban trains in Calcutta area and one out of every three suburban trains in Bombay area are operating with Bhopal-built electric traction equipment. Over 350 diesel electric locomotives hauling frieght and passenger traffic all over India are equipped with Bhopal-built electric traction equipment.

The Bhopal factory is setting up, on a turn key basis, some of the sophisticated traction rectifier substations in South-eastern and North-eastern sections of Central Railway. These substations have a cumulative capacity to pump additional 42,000 KW of electric power.

400 KV System

In keeping with the country's plans to switch over to 400 KV transmission systems, the Bhopal factory has undertaken to manufacture transformers for 400 KV system. Some of the major equipment recently designed and manufactured by the Bhopal factory include a 400 KV current transformer and a 400 KV coupling capacitor.

Nuclear Turbines

The Bhopal factory is also making contribution to Atomic Power Stations in the country by way of supply of Nuclear Turbines for Kalpakkam and Narora Atomic Power Plants in Tamil Nadu and Uttar Pradesh respectively. India-built war ships will soon be propelled with Bhopal-built marine turbines, already supplied to the Indian Navy.

Ancillary

BHEL is also instrumental in fostering the growth of ancillary units. It has already allotted 56 ancillary units so far, of which nearly half have been allotted to former employees of the Bhopal factory and six to unemployed engineers. The units which have already gone into production provide employment to over 1,500 persons. The total output of these units was about Rs. 25 million in 1973-74.

Exports

Besides meeting a bulk of India's own requirements of heavy electrical equipment, the Bhopal factory has also exported its products to a number of countries including Malaysia, Singapore, Ghana, Iran, Kuwait, Malawi etc.

Three sub-stations under the National Electricity Board of Malaysia are being equipped with Bhopal-built transformers. These include, amongst others, two 75,000 KVA each power transformers - the largest ever to be exported from India. Large motors with ratings 2,500 HP and 1,300 HP manufactured and supplied by the factory have recently been commissioned at Kufa Cement Plant in Iraq. These are the largest motors exported from India.

DIVERSIFICATION SCHEME FOR PRODUCTION OF SPECIAL STEELS

In India, there are a number of electric furnace units which are presently permitted to produce mainly mild steel ingots/billets. There are also some composite units having melting as well as rolling facilities which have to confine their production to mild steel ingots/billets only and rolled sections/profiles.

Government of India have considered the desirability of permitting these units to produce higher grades of steel for which some of the units may be suited, while others may require only some minor balancing facilities to be added. Such diversification providing flexibility to produce other grades of steel has been considered desirable in view better utilisation of scarce inputs/resources, viz. scrap and power and for stepping up production of higher grades of steel to achieve import substitution and to meet growing indigenous demand.

The Indian Government have accordingly decided that units which hold licences/registration certificates under the Industries (Development and Regulation) Act for the manufacture of mild steel ingots, with or without captive rolling facilities, will be free to diversify their production to include certain grades of carbon, special and low alloy steels.

In view of the special fields of application and strict specifications to which these steels should conform, it has been considered that the diversification can be availed of only by those units which have the requisite production and testing facilities and technical competence to undertake the production of the grades of steels permitted under the present relaxation. The special steels to be manufactured under the scheme are to confirm to Indian Standards Institutions (ISI) specifications.

Composite units having melting as well as re-rolling facilities are also eligible to produce rolled products to ISI specifications.

OUTPUT PROGRESS IN HEAVY ENGINEERING

The Heavy Engineering Corporation (HEC), Ranchi, Bihar, one of the public sector enterprises engaged in the manufacture of heavy engineering equipment achieved a considerable progress in production during the first three quarters of 1973-74 (April-December 1973).

All the three plants of HEC contributed to the production turnover during the period. For example, the Foundry Forge Plant (FFP), achieved its output target of Rs. 117.80 million by as much as 98 per cent with a production turnover worth Rs. 115.60 million which reflected sizeable improvement over the output in the same period of 1972-73 at Rs. 81 million.

HEC's second plant, Heavy Machine Building Plant (HMBP) also registered cumulative achievement in structural production during the period at 119 per cent of the target of Rs. 12.12 million. The production was as much as Rs. 14.45 million. In April-December 1972, the output of the plant was Rs. 12.67 million. Notwithstanding various bottlenecks at production level, the plant's overall output in mechanical equipment was as high as 81.4 per cent of the target. In terms of value, the production was worth Rs. 213.20 million as against the target of Rs. 261.70 million.

In the Heavy Machine Tools Plant (HMTP), the production of jobbing works and accessories during April-December 1973 was Rs. 2.6 million against the target of Rs. 2.69 million. In the corresponding period of the last year, the turnover in this field was nearly Rs. 1 million. The unit's production of machine tools was Rs. 5.90 million against the target of Rs. 7.40 million.

During 1972-73, HEC's total production reached an all time high during the preceding three years at 45,261 tonnes as against 36,915 tonnes in 1971-72 and 28,489 tonnes in 1970-71. In terms of value, the production in the respective three years was Rs. 511 million, Rs. 421.30 milllon and Rs. 310.45 million.

In the total production of HEC during 1972-73, the Foundry Forge Plant (FFP) accounted for 29,415 tonnes (Rs. 121.35 million), the Heavy Machine Building Plant (HMBP) 36,089 tonnes (Rs. 374.27 million) and the Heavy Machine Tool Plant (HMTP) 1037 tonnes (Rs. 14.65 million).

LARGEST BAUXITE DEPOSIT FOUND

Claimed to be the second largest in the world, a deposit of bauxite estimated at 1050 tonnes with 40 to 60 per cent of alumina content has been found in the State of Orissa in the districts of Koraput, Kalapandi and Sambalpur.

Already a proved reserve of 77.74 million tonnes of bauxite was established in a joint survey by the Geological Survey of India and the State Directorate of Mines. Of this, 50 million tonnes have been located in the Potangi plateau in Koraput District.

A few months back, bauxite deposits were discovered in Madhya Pradesh also. In the State, high and medium grade bauxite were located in Mainpat in the Sarguja District. The survey for locating deposits was conducted jointly by the Bharat Aluminium Company and the Russian experts. The Survey has, so far, located buxite deposits in four blocks of Manipat.

DETECTING NUCLEAR EXPLOSIONS

The Gauribidanur Seismic Station of the Bhabha Atomic Research Centre (BARC), set up in 1965 near Bangalore (Karnataka State), has a full array of 20 sensors deployed over an area of 625 sq. kms. The Station helps in the detection and identification of underground nuclear explosions and also facilitates seismic research. For the reliable on-line detection and rough classification of major seismic events within 10,000 kms., the scope of the seismic array has been enhanced by developing effective programmes based on the statistical behaviour of local earth noise. The Chinese atmospheric nuclear explosion of June, 27, 1973 was detected and its energy was estimated within four hours of its detonation. A programme has been undertaken to study the seismogenic features of the south eastern coastal region of Saurashtra for assessing its suitability for a nuclear power station.

Under the programme, a mobile wireless-telemetered tripartite seismic array has been designed and deployed to monitor micro-earthquakes.

PROGRESS IN OPHALMIC GLASS MANUFACTURE

India entered into the manufacture of ophalmic blanks only recently. Ophalmic glasses which were being imported into India hitherto are now being manufactured indigenusoly by M/s. Bharat Ophalmic Glass Limited, Durgapur, West Bengal, the only project of its kind in India in this line of manufacture.

Notwithstanding its fresh entry into the field, the Durgapur company witnessed a sizeable increase in the production of opthalmic glass and optical glass and lenses during 1972-73 over that of the preceding year. The total output increased to nearly Rs. 2 million (1972-73) from only Rs. 0.72 million (1971-72) while in terms of quantity, the output went up to over 69 tonnes from nearly 29 tonnes.

Opthalmic blanks accounts for the major share in the overall output of the firm. During 1973, its production was estimated at Rs. 1.42 million (62.6 tonnes) as against only Rs. 0.58 million (26.63 tonnes) in 1971-72. Manufacture of optical glass (for window shields for Bhabha Atomic Research Centre) was taken up for the first time in 1972-73 on a limited scale - 1.4 tonnes. The output of lenses more than doubled to Rs. 0.42 million (0.50 million pieces) from only Rs. 0.18 million (0.22 million pieces) in 1971-72.

The value of production in 1973-74 is likely to go up to about Rs. 2.35 million from nearly Rs. 2 million in 1972-73. With a view to improve the economic viability of this unit, a high level Techno-Economic Committee was set up to advise the Indian Government. In pursuance of the Committee's recommendations, the firm has uudertaken a programme of diversification for the manufacture of some more remunerative items, such as, camera blanks and lenses, tank, prisms blanks, snow goggles etc. In order to improve the pot firing capacity for a better utilisation of melting furnaces, two pot arches are under installation and are expected to be ready soon. Notwithstanding these measures, owing to lack of advance technology of continuous process, the production cost is more than the imported blanks presently.

Though the firm entered into production of these items only recently, it started earning foreign exchange on a moderate scale. Since inception to date, it secured two export orders worth over Rs. 1 million from USSR.

India's glass industry has been producing a variety of glasses catering to the requirements of different fields. The production range includes bottles and vials (including semi-automatic), sheet glass, shells, vacuum flasks and laboratory glassware.

In 1973, in the organised sector, the production of various types of glasses was: bottles and vials 180,000 tonnes (installed capacity 265,500 tonnes and number of units 23); sheet glass 15 million square metres (170 million square metres and 6 units), glass shells 150 million pieces (170 million pieces and 7 units); vacuum flasks 5.5 million numbers (4.5 million numbers and 3 units) and laboratory glassware 2081 tonnes (7200 tonnes and one unit).

India's total exports of glass and glassware totalled Rs. 27.88 million in 1972-73 as against Rs. 14.37 million in 1971-72. Of this, glass earned Rs. 12.68 million while glassware brought in Rs. 15.20 million.

In the first three quarters of 1973-74 (April-December 1973), the exports of glass and glassware together totalled Rs. 25.30 million as compared to nearly Rs. 20.25 million in the same period of the preceding year.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

ALUMINIUM ALLOY CONDUCTOR - NML-PM2

The National Research Development Corporation of India, 61, Ring Road, New Delhi-24 offers technical know-how for the manufacture of NML-PM2, an aluminium alloy which can replace copper particularly for the production of underground telephone cables. Besides telephone cables, the alloy can also be used for covered conductors, domestic wiring, automobile cables, power cables, enamelled winding wires and ACCR over-head conductors.

The use of aluminium in telephone industry has not found acceptance because of the general lack of ductility in the wires made from electrical grade aluminium. The new aluminium alloy, which has been developed by the National Metallurgical Laboratory (NML), Jamshedpur, possesses high electrical conductivity, ductility comparable to that of copper and improved corrosion resistance over the electrical grads aluminium.

The NML process for the production of the alloy consists of melting aluminium metal and addition of requisite quantities of alloying metals. The hot alloy obtained is cast into ingots under rapid rates of cooling. The wires of the required thickness can be produced from ingots by thermo-mechanical treatment.

The NML-PM2 alloy has been subjected to extensive inplant trials by some cable manufacturers and they are fully satisfied with its properties. The new alloy as been found suitable for underground cables by Telecommunication Research Centre of the Posts and Telegraphs Department.

All the raw materials and the equipment required for wire drawing and heat treatment are available indigenously.

CRT DISPLAY SYSTEM DEVELOPED

The National Physical Laboratory (NPL), New Delhi, has developed a CRT numeric display system in which numeric data could be displayed on a cathode ray tube (CRT). The data could also be displayed on a conventional oscilloscope from a key board or measuring instruments. A large number of digital parameters like frequency, time, voltage, current, resistance and temperature could be simultaneously displayed on a CRT, thus avoiding the inconvenience of viewing such data on various panels.

CRT display would be an ideal choice with calculators, where there is need to display more than one memory register. The instrument would find extensive use in process control industries and research laboratories.

EAR MICROSCOPE (MONOCULAR TYPE)

The Central Scientific Instruments Organisation (CSIO), Chandigarh, has successfully developed ear microscope (monocular type) which is useful for examining the inside of the ear for swellings, discharge, vascular tumours and defects of the tympanic membrance.

The instrument essentially consists of an arrangement to illuminate the interior of the ear and a microscopic system to visualise the magnified image.

Iluminating arrangement consists of a light source 6V, 12 watts standard lamp with stepped control for intensity variations. The semi-spheritical surface, posterior to the semi-circular filament of the lamp is silvered to provide a complete circular filament as an effective source of the light. The radiations of the lamp after passing through a condenser are reflected by plane and concave mirrors to form an intense circular light patch. The whole arrangement is located in the main body of the instrument.

An objective porro-prism assembly and Ramsden's eyepiece (with iris diaphragm) form the viewing system of the instrument providing an overall magnification of 6.3x. The object field/size which can be varied from 2 mm to 8 mm for all positions of the eyepiece focussing movements helps in excluding the reflections from the speculum walls thereby increasing the contrast of the image.

The complete instrument is provided with five specula of various sizes to be used with different age groups and a transformer for the lamp supply.

The instrument is being used in medical institutes, and hospitals and is required by most of the medical practitioners.

All the materials and components used in the fabrication of the instrument are available indigenously. Any firm having the mechanical work-shop capable of normal turning, milling, surface finishing and fitting operation, alongwith an optical workshop capable of manufacturing precision optical components likes lenses and prisms can take up this process.

INDO-UK TRADE

United Kingdom has been India's most important trade partner right upto the beginning of Sixties. Upto 1964-65, she ranked first among the buyers of Indian products and was the second best source of goods imported into India.

During 1951-56, India's exports to UK averaged Rs. 1640 million per annum forming about 28 per cent of exports to all destinations while imports were Rs. 1563 million, accounting for 25 per cent of India's total average imports during the period. The balance of trade was in favour of India to the tune of Rs. 77 million per annum.

In the next five year period, average annual exports to UK at Rs. 1698 million accounted for 25 per cent of India's exports. Imports during this period averaged Rs. 2020 million (20 per cent) converting the balance of trade adverse to India by Rs. 322 million per annum.

During 1961-66–the Third Five Year Plan, the balance of trade between the two countries continued to remain adverse to India by Rs. 142 million per annum. India's exports to UK during this period averaged Rs. 1606 million per annum marginally less than the earlier periods but forming only 21 per cent of India's total exports. Imports from there during the same period averaged Rs. 1748 million per annum and 14 per cent of India's global imports. Thus, UK's share in India's foreign trade come down considerably.

The next five year period—1966-71 witnessed a reversal of the earlier trend. India now enjoyed a favourable balance of trade more because of the decrease in imports rather than increased exports. Average annual exports during the period were Rs. 1937 million and imports Rs. 1359 million resulting in a balance of trade of Rs. 578 million per annum in favour of India.

After 1970-71, imports from UK have again risen the actual figures for 1971-72 and 1972-73 being Rs. 2208 million and Rs. 2255 million respectively. Exports drifted lower to Rs. 1687 million and Rs. 1725 million respectively in the two years. The balance of trade again was adverse to the extent of Rs. 521 million and Rs. 530 million respectively.

The predominant item in India's exports to UK in the early Sixties was tea. It generally accounted for 45 per cent of total exports to that country. Next in importance came cotton textiles, leather and oilcake each with a share of about 9 per cent. The share of tobacco unmanufactured was generally above 6 per cent while jute manufactures formed about 5 per cent. The other items of exports accounting for over 1 per cent were precious stones, woollen carpets, coir manufactures, coir yarn, wool and mica.

The major items of imports from UK have been machinery of various types, transport equipment, iron and steel and chemicals. The first three items alone account for about sixty per cent of India's import from UK.

Importance of Indian Tea as the predominant item of export to UK decreased in the later Sixties and in 1972-73, tea exports at Rs. 394 million were only 23 per cent of India's total exports to that country. Oilcakes (Rs. 70 million) accounted for 4 per cent but cotton piecegoods and leather improved their share to 10 per cent (Rs. 173 million) and 16 per cent (Rs. 280 million) respectively. Unmanufactured tobacco also at Rs. 123 million improved its share to 7 per cent. Jute goods, however, declined to Rs. 47 million with a share of about 3 per cent only. New items which became more important were precious stones (Rs. 47 million and 3 per cent), engineering products (Rs. 37 milion and 3 per cent), clothing (Rs. 30 million and 2 per cent) and fruits and vegetables (Rs. 42 million and 2.5 per cent). In imports the composition remained practically the same as in the earlier years.

In 1973-74, India's trade with UK showed a marked improvement both in exports and imports. Exports during the first ten months stood at Rs. 2063 million a rise of 39 per cent over Rs. 1483 million recorded in the corresponding period of 1972-73. The UK ranked fourth among customers of India's products after Japan, USA and USSR. India's imports from UK also continued to rise as has been the case in the preceding three years. The actual imports during the first nine months of 1973-74 were Rs. 1796 million as compared to Rs. 1600 million in April-December 1972.

Detailed commodity wise figures of trade are available only upto September 1973. Tobacco is now the most important commodity forming 18 per cent of total exports, actual figures of exports during April-September 1973 and April–September 1972 being Rs. 217 million and Rs. 109 million. Leather evports were the next in importance at Rs. 178 million in April-September 1973 compared to Rs. 135 million in the corresponding period of 1972. The value of tea exported was Rs. 168 million in 1973 while in 1972 it was Rs. 253 million. It seems that in the recent years competition from East African teas has become very stiff. Cotton manufactures fetched Rs. 151 million in 1973, more than double of Rs. 62 million in 1972. Clothing improved from Rs. 14 million to Rs. 21 million in 1973. Along with tea, exports of jute manufactures also declined from Rs. 32 million in 1972 to Rs. 20 million in 1973.

A new item entering into Indian exports to UK is fish in air–tight containers. Exports in April-September 1973 reached Rs. 15 million against only Rs. 5 million in 1972. Fixed vegetable oils also showed a similar improvement from Rs. 20 million in 1972 to Rs. 51 million in 1973.

In regard to imports, the major items were machinery (Rs. 465 million), transport equipment (Rs. 115 million), iron and steel (Rs. 146 million), precious stones unworked (Rs. 182 million), chemical elements (Rs. 49 million) and non-ferrous metals (Rs. 47 million).

India and UK are also collaborating in a number of industrial projects. UK is one of the leading foreign countries to have invested in Indian industries as joint ventures or as technical collaborations. Similarly, an Indian firm has set up a venture in UK for the manufacture of asbestos cement products. This unit went into operation in 1969. ☐

Attention

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STEEL TUBES AND PIPES FOR EXPORT

Steel tubes and pipes industry in India has made appreciable headway in the export field over the last few years. Foreign exchange earning of the industry was Rs. 106.60 million in 1970-71. In the year that followed, it improved to Rs. 108 million to attain a level of Rs. 111.80 million in 1972-73.

In the first ten months of 1973-74 (April 73-January 74), the performance of the industry improved sizeably. It nearly doubled its export earning to Rs. 176.75 million compared to Rs. 94 million in the same period of the preceding year. Galvanised and ungalvanised tubes and pipes of iron and steel (except cast iron welded) alone fetched as much as Rs. 133.92 million. In this, the share of galvanised category was about Rs. 115.40 million while the non-galvanised one accounted for about Rs. 18.52 million. Saudi Arabia was the topmost buyer for galvanised tubes/pipes. It bought worth Rs. 18.92 million in foreign exchange, followed by Iraq at Rs. 14.30 million. Abdu Dhabi, Australia, Bahrein Islands, France, Federal Republic of Germany, Ireland, Jordan, Kenya, Kuwait, Libya, Mauritius, Muscat, Qatar, U.K., and U.S.A. were prominent among other buyers.

For non-galvanised tubes/pipes, Jordan which imported worth Rs. 3.18 million was the leading buyer, followed by U.K. at about Rs. 2.30 million. U.S.A., Saudi Arabia, Australia, Iran and Kuwait were the other important buyers.

Besides tubes and pipes, fittings were also active in export trade. Their export value was Rs. 27.34 million, which included Rs. 7.66 million for cast iron fittings, Rs. 15.28 million for galvanised ones and Rs. 4.40 million for non-galvanised category. Singapore, Czechoslovakia, Iraq and Poland were the important destinations for these fittings.

Contributing to the export effort in the line, M/s. Gujarat Steel Tubes Limited (Bank of India Bldg., Bhadra, Ahmedabad) one of the manufacturers in the field succeeded in stepping up their exports to Rs. 22.50 million in 1973-74 from merely Rs. 9 million in the preceding year. The company hopes for a still better performance in the current year.

The production range of the firm includes electric resistance welded pipes and couplings, steel galvanised pipes and tubes and other articles of iron and steel. The company has recently decided to manufacture stainless steel tubes and tube-making machinery. For this purpose, it has formed a wholly owned subsidiary company, called 'Neeka Tubes Private Limited. Necessary steps to procure official permission for the project are under way.

In the organised sector, there were over 9 units(1972) in the line and their total production of 200,000 tonnes was valued at Rs. 200 million. In the same year, in the sand cast iron pipes sector, 4 units with an installed capacity of 57,000 tonnes produced 10,000 tonnes at an estimated cost of Rs. 10 million.

SUGAR MILL MACHINERY AND EXPORT TRADE

Among a broad range of industrial machinery manufactured by India, sugar mill machinery is gradually picking up in overseas markets. The export earning of the industry was valued at Rs. 12 million in 1972-73 as against Rs. 11 million in 1971-72. The export value reached this level from only Rs. 0.5 million in 1965-66 and Rs. 1.8 in million in 1970-71. Uganda, Malaysia, Federal Republic of Germany, Nigeria, Liberia and Ghana are the leading export destinations.

M/s. Walchandnagar Industries Ltd., (Construction House, Ballard Estate, Bombay) one of the units in the line, are reported to be executing a $ 18 million order in Malaysia. Lately, the firm also secured a turnkey order for setting up a complete sugar plant in Uganda. (Details in this connection were explained at page 3 of issue No. 15 (Vol. IV) of this weekly).

Besides considerable success in the export field, the Bombay firm has already commissioned 19 sugar plants in India. Apart from Sugar Plants, they build, erect and commission complete cement plants and manufacture boilers—bagasse, oil or coal fired, medium and heavy duty industrial gears, pressure and reaction vessels and chemical vessels.

The sugar mill machinery industry is, in fact, one of the prominent areas of the industrial machinery group. Its production has been continuously growing during the last two decades. The output value which was less than a million rupees in 1951. rose to as much

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as Rs. 162 million in 1971 to reach a higher level of Rs. 180 million in 1972. During 1973, the production crossed the Rs. 200 million mark.

The current effective installed capacity for the manufacture of sugar machinery including complete plants is estimated at Rs. 250 million. The industry is capable of manufacturing complete sugar plants of 1250/2000 tonnes per day or even higher cane crushing capacity. Some of the manufacturers are also in a position to manufacture sugarcane/beat diffusion plants.

The industry has also attained a superior degree of indigenous content - the present import content is roughly 10 per cent, consisting mainly of bought-out items like hydraulics, ball and roller bearings and centifugal screens.

NATURAL RUBBER TO SUDAN

The Kerala State Co-operative Rubber Marketing Federation has recently exported from Cochin 50 tonnes of natural rubber valued at Rs. 0.34 million to M/s. Bata Nationalised Corporation, Khartum (Sudan) through the State Trading Corporation of India.

India's export trade in crude rubber to overseas markets has been stepped up in recent months. While during the year 1972-73, these exports were valued at only Rs. 1.50 million, the export earning even during the first three quarters of 1973-74 (April-December 1973) was of the order of Rs. 7.43 million. During this period, natural rubber was exported to the tune of Rs. 3.64 million, mainly to Singapore and Netherlands, while unmanufactured crepe rubber sheets were supplied to the extent of Rs. 2.5 million, principally to the German Federal Republic, Japan, Italy and France. Reclaimed rubber was exported to the tune of Rs. 1.15 million, mainly to Iran and Malaysia.

The total quantity of crude rubber exported during 1972-73 was of the order of 1080 tonnes while in the first three quarters of 1973-74, it was 2015 tonnes.

EXPORT PERFORMANCE AND POTENTIAL

INDO-AFGHAN ECONOMIC COOPERATION

India and Afghanistan have agreed to widen the range of mutual economic cooperation. While India would provide expanded and continued assistance for existing projects and schemes in Afghanistan, new areas of cooperation have been identified for India's further assistance.

These new projects are for the establishment of Agricultural Research Institute and dairy farm, consultancy and supervisory services for Hari Rud Power Project, feasibility study of Khwaja Ali Dam and development of Child Health Institute at Kabul as a centre of higher training and research.

Apart from this, India is also to assist the Afghan Governmant in the field of oil drilling and production. It has offered training facilities to Afghan engineers, specialists and technicians in the area of oil exploration. Accordingly, the Afghanistan Government will depute a team of senior executives in the first instance to study facilities available in India for training of Afghan personnel.

India is to arrange a special course at the Institute of Petroleum and Exploration at Dehradun in the Uttar Pradesh for training of geologists, geophysicists, drillers, accountants and other specialists selected by the Afghan Government. This training is likely to commence on 1st August this year.

Besides this, other things include possibility of extending areas of cooperation in the field of public health, medical education and childcare and maternity services.

Both the countries are already having expanded trade relations with each other. During 1972-73, two way trade between the two countries amounted to Rs. 282.60 million as compared to Rs. 146 million in the preceding year. In the first three quarters of

1973-74 (April-December 1973), the trade turnover totalled Rs. 168.25 million.

During 1972-73, India's exports to Afghanistan were of the order of Rs. 122.30 million as against Rs. 98 million in 1971-72 while the imports from Afghanistan in the respective years were valued at Rs. 160.30 million and Rs. 48 million.

During April-December 1973, against the Indian exports at Rs. 88.50 million, the imports from that country were of the order of Rs. 79.75 million.

BRIGHT PROSPECTS FOR INDIAN TEA IN LIBYA

A vast export potential awaits Indian tea in Libyan market. During the recent visit of a trade delegation from India, led by the Chairman, Tea Board to Libya, the Libyan Government evinced keen interest in Indian tea. The per capita consumption of tea in Libya is stated to be one of the highest in the world, estimated at 4.55 kgs which is even more than that of the United Kingdom's at 4.02 kgs.

At persent Libya's imports of tea from India are very negligible but there exists a substantial scope for improving tea exports taking into account the high rate of tea consumption in that country. Taking advantage of monthly shipping service from India to Libya, tea exports from India can be improved sizeably from the present negligible level.

During 1972-73, Libya imported only 4992 kgs of packet tea from India at a negligible value while during the first three quarters of 1973-74 (April-December 1973) the quantum improved to 59,046 kgs at a value of about Rs. 0.58 million.

The Indian Government proposes to send official delegations to a number of countries, such as, Abu Dhabi, United Arab Emirates etc., with a view to make on-the-spot survey of their requirements as also for assessing the prospects for Indian tea in these countries.

India's total exports of tea during 1972-73 totalled Rs. 1473 million as against Rs. 1563 million in 1971-72.

EXPORT TRADE IN PLYWOOD

India will host the Third World Consultation on Wood-based Panel Products in February 1975. This Consultation will bring together all the FAO (Food and Agriculture Organisation) member-countries and experts in research and development of the panel industry as well as traders and consumers from all over the world.

India's plywood manufacturers secured export orders worth Rs. 80 million during 1973-74 of which shipment worth Rs. 45 million were completed during the same year.

During the year, 30 per cent of the total production of plywood was exported and efforts are underway to further increase the exports in view of the large potential available for plywood in foreign markets.

During the first ten months of 1973-74 (April '73 January '74), Iraq, Kuwait, United Arab Emirates, Qatar, Bahrein Islands and U. K. were the major export destinations.

There are several areas in India where wood resources are available for large scale expansion of plywood industry. Wood shortage in the world is likely to continue and the world's attention is now focussed on the tropical forests and their possibilities.

An regards raw materials required for export production of quality plywood products, the supply position of Methanol, a critical raw material required for the manufacture of formaldehyde resin, has been considerably eased in India by its import being arranged through the State Trading Corporation. Other raw materials like urea formaldehyde,phenol and formaldehyde synthethetic resin are allowed to be imported under the import replenishment policy for Registered Exporters.

TREND IN TEA EXPORTS

As compared to Rs. 1473 million earned in foreign exchange during 1972-73, India's export trade in tea amounted to Rs. 1155 million during the first three quarters of 1973-74 (April-December 1973). During this period, a quantity of 136 million kg. of black tea leaves in bulk was exported to fetch Rs. 1050 million. The major importers of this variety were U.K. Rs. 314 million, U.S.S.R., Rs. 263 million, Netherlands (Rs. 86 million), German Federal Republic (Rs. 56 million), Iraq (Rs. 41 million), U.S.A. (Rs. 41 million), Iran (Rs. 35 million) and Arab Republic of Egypt (Rs. 35 million). Black tea dust in bulk was supplied abroad to the tune of 1.92 million kg to secure nearly Rs. 14 million. Bulk tea in packets up to 20 kg earned Rs. 77 million (9 million kg.), Green tea was supplied mainly to Afghanistan and Japan and total export earning in the period under review was of the order of Rs. 13 million.

Foreign companies account for about 44 per cent of the total production in India. The remittance of profits by the various companies is estimated to be of the order of Rs. 30 million per year constituting about one-tenth of the total gross profit for the whole industry.

Tea prices in the international markets were stagnant for a long time but have considerably improved during the last few months. Under the auspices of the Food and Agriculture Organisation (FAO) of United Nations efforts are under way to bring into operation an international tea agreement with a view to improve the 'real' price of tea. The exporting countries have in a recent meeting (the 7th session of the Sub Group of tea exporters) held in Rome (June 1974) decided to adopt a multi dimensional approach for increasing tea consumption, improving tea prices and global promotion of tea in general. India is at present a member of eight tea councils and undertakes generic promotion of tea in conjunction with tea producing countries and local tea packers.

EXPORT POSITION OF COIR GOODS

There has been a consistent uptrend in India's export trade in coir goods in terms of foreign exchange earning. The export proceeds improved from Rs. 148.6 million (52,312 tonnes) in 1971-72 to Rs. 148.40 million (49489 tonnes) in 1972-73 and to Rs. 155.40 million (46,689 tonnes) in 1973-74. Evidently, thus the unit value of coir goods exports has been improving year after year.

During the five month period of 1974 (January-May), the export of coir products registered an improvement at Rs. 66.7 million (189,567 tonnes) as compared to Rs. 57.30 million (18533 tonnes) during the corresponding period of 1973.

Export trade in coir yarn declined, however, mainly because of curtailment in the manufacture of coir products by the coir industry as West Europe made inroads by synthetic fibres as well as substitutes into the international markets. Due to these factors there was a decline in Indian exports and in terms of quantity Australia, Canada, German Democratic Republic, Czechoslovakia, France, Hungary, Japan, U.K. and U.S.S.R. imported less.

A Sales-cum-Study team has been recently sponsored to explore markets for coir and coir products in West European countries including U.K., and U.S.A. The Government of India are negotiating with European Enoocmic Community countries for improving their offtake of coir products by reducing tariffs thereon, imposed by them. The intergovernmental group on fibres of FAO has recently agreed in principle to set up a Coir Research Centre with one branch in India and an other in Sri Lanka. This organisation has also decided to undertake a coir project survey and to transfer technology from developed countries to developing countries.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

SUPPLEMENTARY UNION BUDGET PRESENTED

India's Minister of Finance, Mr. Y. B. Chavan, has presented on July 31, 1974 a second Finance Bill for the year 1974-75, only five months after he presented the regular Annual Budget. "The decision to come forward with a second Finance Bill is not only an indication of the seriousness of the economic situation, but also a measure of the Government's determination to grapple with it effectively".

The emphasis in the Central budget for 1974-75 was to restrain the growth of Government expenditure, mobilise additional resources on a substantial scale and to reduce reliance on deficit financing. This was a part of the over-all anti-inflationary strategy. But the price trends in the last four or five months did not indicate any visible reduction in the strength of the inflationary forces operating in the Indian economy. The continuing deterioration on the price front has been a source of the greatest concern to the Government. While controlling inflation constitutes the single most important task facing the country, the measures adopted so far by the Government to curb inflation have had a limited impact.

The Finance Minister felt that the major cause for the persistence of the inflationary pressures was basically rooted in the sluggishness of agricultural production. The recent wheat crop was not up to original expectations. The production of oilseeds has also been inadequate. Industrial production remained virtually stagnant in 1973 and continues to be inhibited by power shortages. All these factors point to the persistence of a sizable imbalance between the aggregate demand and supply. As a result, Government considered it necessary to come forward with a fresh package measures designed to reduce the imbalances.

The basic objective of three recent ordinances involving temporary restrictions on declaration of dividends, immobilisation of half of additional dearness allowance and of increase in wages and salaries and compulsory deposits by income tax payers in higher income groups was to reduce the pressure of demand and decelerate the rate of growth of money supply. The fundamental imbalance that exists in the Indian economy could be removed only through a sustained increase in agricultural production, though it would not be an easy task because of inadequate indigenous production of fertilisers and steep increases in their import prices (the fertiliser import bill is likely to be over Rs. 4500 million for the year).

Referring to the foreign exchange reserves Mr. Chavan stated that these had held up fairly well mainly due to the borrowings from the International Monetary Fund, continued external assistance and particularly to a rapid growth in the country's export earnings during 1973-74. The export outlook for 1974-75 is, however, not equally encouraging. The prices of some of the export products have declined in recent months. In addition, the high current rate of inflation constitutes a serious threat to the maintenance of the competitiveness of India's exports which might threaten the viability of India's balance of payments, stated the Finance Minister.

It is against this background that the Finance Bill was presented and some of the major highlights are outlined below : while announcing the proposals, care has heen taken not to impose fresh levies on articles of mass consumption and on the basic necessities of life. At the same time, the need to discourage conspicuous consumption and to effect maximum economy in the use of scarce materials is implicit in the proposals. In the field of direct taxes, a tax levy has been proposed in the Finance Bill on the gross amount of interest received by scheduled banks on loans and advances made in India. In view of the large unearned incomes accruing as a result of inflationary situation, the tax on capital gains has been proposed to be increased. The incidence of tax on long-term capital gains is also to be increased in the case of companies.

In respect of indirect taxes, the Finance Minister stated that he had no option but to increase Central Excise Duties selectively. The duties proposed were on copper and copper alloys and unwrought zinc; nylon filament yarn and staple fibre and yarn of cellulosic origin; cotton yarn going into the manufacture of superfine, fine and medium-A fabrics manufactured by power looms; tyres other than those meant for scooters, motor cycles and mopeds; cement, cigarettes, pig iron, latex foam sponge, asbestos cement products and electric lighting bulbs and tubes.

As regards the customs duties, the Finance Minister stated that the inflationary trends in international prices continue and therefore he decided to leave customs duties proper unchanged although additional revenue from countervailing duties consequent on the changes proposed in Central excise duties would be expected.

The Finance Minister also impressed upon State Governments that they have no less a vital role than the Central Government in contributing to greater fiscal discipline. "In order to reduce their deficits without affecting the pace of development, they ought to exploit fully the potential offered by agricultural taxation. They were also urged to take steps towards a more realistic pricing of services like irrigation and electricity.

In sum, the supplementary budget seeks to raise Rs. 2320 million. The original budget for 1974-75 presented earlier sought to yield Rs. 2120 million. Thus, the original and supplementary budgets are to yield a total sum of Rs. 4440 million for the year 1974-75.

OIL EXPLORATION IN KUTCH AND BENGAL BASINS SOON

Offshore oil exploration would be initiated in the Bengal and Kutch basins on August 1, 1974 when the contracts with two US firms, concluded recently, come into operation. Under the two contracts ranging from 24 to 27 years, Carlsberg India Group would carry out oil exploration and production programme in the Bengal basin and Reading and Bates Group in the Kutch basin.

The foreign firms would conduct seismic survey in the entire basin area, approximately 28,000 sq. kms. in each case and would then select within two years an area of 5,000 sq. kms. for exploration operations surrendering the remaining area alongwith the data collected and interpreted upto that time to the Government. By the end of the third year, the area will be reduced to 2,500 sq kms. and at the end of the seventh year, contractors would be left with the producing areas.

Once oil is struck, the cost of exploration and development would be recovered by the contractor upto a maximum of 40 per cent of the annual production as 'cost oil' subject to the stipulation that amortisation of investment would in any case be spread over to not less than four years. The balance 'profit oil' would be shared by the Government and the contractors in the ratio of 65 : 35 at the lowest production slab. This ratio would increase in stages to 80 : 20.

The contract ensures that the collaborator would make a concessional supply of a portion of this share of the 'profit oil' 'for meeting India's domestic requirements. The Government has the right to acquire at fair market value all the 'cost oil' and the contractor's share of 'profit oil' till such time the country is self-sufficient in oil supplies. After the contractor has recovered twice his investment through 'profit oil', his share of the profit would fall sharply to around 25 per cent of what it would be upto that point. The two contracts also provide for maximisation of Indian personnel and for their training as well as for the maximum use of Indian goods and services.

PROGRESS IN MACHINE TOOLS MANUFACTURE

Indian machine tool industry has been registering significant strides in production in recent years. A number of firms engaged in the line contribute their mite in developing new ranges of machine tools to keep pace with the technological developments taking place world over in this field of manufacture. M/s. Machine Tool Corporation of India Limited, a Government of India undertaking, for instance, achieved significant progress in production during 1972-73 in regard to manufacture of even those machine tools which were being imported by the country.

During the year, the Corporation achieved production of 111 numbers of grinding machine tools alongwith special accessories as compared to 65 numbers in 1971-72. The total value of production of the Corporation during the year amounted to Rs. 10.55 million which was nearly 100 per cent more than that of the preceding year at Rs. 5.68 million.

The production during 1972-73 mainly consisted of grinders of various types, such as, universal tool and cutter grinders, vertical surface grinders, crankshaft grinders, internal grinders and centreless grinders. Besides, manufacture of special accessories, outside jobs were also undertaken during the year. Category-wise, the production of grinders during the year was : vertical surface grinders Rs. 3.41 million (1972-73) against Rs. 1.20 million (1971-72), universal tools and cutter grinders Rs. 1.44 million against Rs. 1.37 million; crankshaft grinders Rs. 1.36 million against Rs. 1.22 million and internal grinders Rs. 1.50 million against Rs. 0.77 million. Manufacture of centreless grinders was undertaken for the first time in 1972-73 and the production was valued at Rs. 0.40 million.

In terms of quantity, the production of vertical surface grinders rose from 16 numbers (1971-72) to 42 numbers (1972-73), universals tools and cutter grinders from 36 numbers to 50 numbers, crankshaft grinders from 7 numbers to 8 numbers and internal grinders from 6 numbers to 9 numbers. The production of centreless grinders was 2 numbers during the year.

Production of special accessories as well as turnover from outside jobs, improved to Rs. 2.43 million in 1972-73 from Rs. 1.11 million in the preceding year.

During the year, the Corporation signed an informal protocol with a well renowned firm in the German Democratic Republic for the manufacture of automatic antifriction bearing grinding machines. Similarly, it is also proposing to manufacture a precision horizontal surface grinding machine. The proposal for collaboration is under active consideration.

The Corporation also manufactured jigs, tools and fixtures for its own use, valued at nearly Rs. 2 million during 1972-73. Its production of these items in the preceding year was Rs. 1.23 million. With the manufacture of these products, the Corporation was able to replace certain items of imports in this field. Apart from meeting its own requirement, the Corporation has also commenced manufacture of these jigs and fixtures on commercial scale for supply to domestic firms.

The production of the Corporation for the year 1973-74, has been estimated at Rs. 20 million. The respective shares of the varieties of grinders in the total production during the year have been set at : vertical surface grinders Rs. 3 32 million (40 numbers), universal tools and cutter grinders Rs. 1.80 million (60 numbers), crankshaft grinders Rs. 2.46 million (15 numbers), internal grinders Rs. 5.58 million (35 numbers), centreless grinders nearly Rs. 3.90 million (20 numbers) and special accessories and outside jobs Rs. 2.95 million.

The production trend in the Indian machine tool industry continues to be encouraging during the year notwithstading various constraints at production level. From Rs. 510 million in 1971-72, the production turnover of the industry improved to Rs. 527 million in the following year. The production during 1973-74 was estimated at Rs. 640 million.

The present installed capacity of the machine tool industry is estimated at Rs. 900 million. With the production estimated for the year 1973-74 (Rs. 640 million), the capacity utilisation would be as much as 71 per cent. The industry has in its infrastructure a large number of small, medium and large scale units in public as well as in private sectors. In the public sector, for instance, M/s. Hindustan Machine Tools (HMT), Bangalore is the largest unit which contributed to the tune of Rs. 200 million during 1972-73 in the overall production of Rs. 527 million during the year.

The industry is paying much attention to research aspect for imroving products as also to develop new machine tool items so as to enable the industry to keep pace with the latest production trends in other countries in the world. To this end, a primary research institute known as 'The Central Machine Tool Institute' has been set up at Bangalore in the Mysore (Karnataka) State.

The industry is continually striving hard to achieve import substitution to the maximum possible extent. The import content of the industry which was of the order of 21 per cent in 1969-70 was reduced to a level of Rs. 11.8 per cent in 1972-73.

Despite its late entry in the production field, the industry was able to make a headway in foreign markets. During 1972-73, the industry's foreign exchange earning was of the order of Rs. 25 million which rose to this level from only Rs. 1.5 million a decade back. The export range covers a number of machine tools including even sophiticated ones.

NEW WRIST WATCH UNIT IN KASHMIR

Aiming at increased indigenous wrist watch production, M/s. Hindustan Machine Tools (HMT), Bangalore, is currently engaged in setting up its third plant at Zainkot, a small village near Srinagar, the capital of Jammu and Kashmir State. The construction programme of the plant has been phased so as to allow manufacturing operations to commence simultaneously. Assembling of 53,000 'Chinar' wrist watches to date has surely made an excellent addition to the well-known traditional skills of the region—wood carving, papier machie, carpet-weaving, jewellery making etc.

Designed to manufacture 300,000 watches annually, the factory is at present assembling watches from components procured from the parent unit at Bangalore. The new unit will manufacture all the watch components except springs, jewels and shock-proofing device. The factory will reach its rated capacity in 1976-77. During 1974-75, it is expected to assemble 135,000 watches, of which 20,000 will be partly fitted with components manufactured by the unit itself. It will be possible to increase the capacity to 500,000 watches per annum.

With the development of technological talent in the field in future, the rapid growth of ancillary units would be possible. However, manufacture of leather watch-straps, metal containers and packing boxes would be possible shortly.

The unit is equipped with modern machinery used in watch manufacturing. Of the total outlay of Rs. 47 million, the machinery and equipment will cost Rs. 27.60 million. The bulk of the plant and machinery are imported. The venture is the first major public sector project of the Central Government in this region. This is, in fact, in fulfilment of a part of the basic aim to promote a number of engineering industries in the region.

HMT achieved more than 100 per cent capacity utilisation in production of machie tools and watches during 1972-73. During the year, the firm's licensed capacity for machine tools was Rs. 100 million and the actual production was valued at Rs. 113.70 million. The licensed capacity for watches was placed at Rs. 46 million but actual production at Rs, 60.20 million far exceeded the capacity.

The combined production of all the units of HMT at Bangalore, Hyderabad, Kalamassory, Pinjore and Srinagar was worth Rs. 400.80 million in 1973 which was higher than the output in 1972 at Rs. 312.30 million and Rs. 286.10 million in 1971. HMT's target for the year 1974 was placed at Rs. 655 million.

HMT's total foreign exchange earning during 1973 amounted to Rs. 21.70 million. The exports improved to this level from Rs. 16.40 million in the preceding year.

The Bangalore firm proposes to diversify its activities by taking 17 new schemes in the Fifth Plan. Some of these are for the manufacture of lamps and lamp making machinery with Hungarian collaboration, sliding head stock automatics with Swiss collaboration and shock absorbers, hair springs and main springs for wrist watches with Japanese collaboration.

Apart from the above, manufacture of diecasting machines at Bangalore, agricultural tractors at Pinjore, printing machines at Kalamassory and heavy duty presses at Hyderabad are some of the schemes.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

TRANSDUCER FOR STRUCTURAL TESTING

The National Aeronautical Laboratory (NAL), Bangalore, has developed recently a vibration generator (shaker) which has application in structural testing.

The Vibration Generator (shaker) is an electrodynamic transducer designed for application in structural testing, such as, the excitation of mechanical vibrations in components, parts or models and also for calibration of small vibration pick ups. The advantage of the electro-dynamic type shaker over mechanical types is their capability to operate over a wide range of amplitude and frequency which can be controlled independently. They are portable, simple to operate and can be used also in control systems requiring linear force feed back.

The shaker type VG - 2 consists of coil supended by flexures in a magnetic field formed in annular gap across mild steel pole pieces. A cylindrical permanent magnet supplies the magnetic field. The coil carries a spindle at the top, to which can be attached the objects to be shaken. When a current is passed through the coil, the reaction between the permanent magnetic field due to coil current causes the coil to move in the axial direction, and exert force on the member to which the spindle is attached.

The technical specifications for the VG - 2 shaker are Vector force output 1 kg; D.C. coil resistance 10 ohms; static force factor 0.7 kg/amp; suspension resonance 30 Hz nominal; mass of moving assembly 50 grams nominal; minimum unloaded table resonace 20 'g's; useful frequency range D.C. - 1 KHz and Drive power required 25 watts.

The driver amplifier for the generator is a transistorised power amplifier with good low frequency response. The amplifier has a nominal output of 30 watts. The output can be connected to inductive or resistance loads. Overvoltage tripping arrangement is incorporated to protect the vibrating model from excessive vibration either when the output gets open circuited or when power more than specified is applied to the load. The protection circuit continuously senses the output voltage and compares it with a calibrated DC voltage which can be varied by a potentiometer. The instrument operates on 230V, 50 Hz AC mains.

The technical specifications of the amplifier are : maximum output power 30 watts; distortion at maximum power 1 per cent; input voltage for full power 600 mV; input impedence 100 K, output load impedence 10 ohms nominal at 800 Hz and frequency response 1.5 Hz to 5000 Hz-1 db with respect to 800 Hz.

This unit finds wide application in aircraft industry, motor industry, R & D academic institutions, etc. for finding the ressonance frequeney of simple and complicated structure including models, and for studying stress strain and fatigue analysis of structures.

No market survey has been conducted for this item. It is expected that the demand for vibration generator may be around 100 to 150 per year. Prior to the development of this unit, the requirements were being met through imports.

Investigations have been carried out on pilot plant scale. Technical know-how and production drawings are ready for commercial exploitation. The units are in production for 2 years on a pilot plant scale. A number of research and production organisations in the country have been supplied with the generators and amplifiers. All the units supplied have given good performance.

The plant and equipment required in the manufacture of the device include capital equipment such as lathe GD 2-kiroloskar, drilling machine, milling machine, welding machine, painting unit and sheet metal shearing and bending machine, while electrical test equipment that are required for the manufacture include AC milliovoltmeter, DC millivoltmeter, DC Oscillioscope, Multimeter, A.F. Oscillator, Distortion analyser and L.C.R. Bridge.

All the raw materials needed for fabricating are available indigenously.

The total investment for setting up a plant of 100 units per annum has been estimated at Rs. 300,000. The plant and machinery will cost nearly Rs. 100,000. The cost of production of the generators with amplifier has been worked out at Rs. 2400/.

DIGITAL FREQUENCY METER DEVELOPED

A Solid State Digital Frequency Meter, using integrated devices, was developed by the Central Scientific Instruments Organisation, Chandigarh recently. The developed meter can measure frequency period, average time interval and frequency ratio of two signals. The salient features and specifications of the new device are : Seven Digits Nixie Readout, input impedance 1 megohm shunted by 25 pf. It can measure time down to 100 nano seconds, gate times from 1 micro sec. to 1 sec., holds display between samples by the use of memory latch. Besides it is light weight and rugged.

The specifications of the device in regard to frequency include range 0 to 23 MHz; sensitivity 100 mV to pk; accuracy ± 1 Count, input impedance channel A; input 1 Meg ohm shunted by approximately 25 pf; Gate timings from 1 micro sec. to 1 sec. in decade steps and display Hz or MHz with positioned decimal.

The specifications with reference to period are : range 0-10 MHz; Input Channel A; Frequency counted 1 Hz to 10 MHz selectable in decade steps; Accuracy ± 1 count and display microsecond., milli sec, or sec. with positioned decimal.

Frequency Ratio specifications of the meter are : input Channel A 0-20 MHz and Channel B 0-1 MHz; Accuracy 1 count of Fa and display Fa/Fb x Multiplier (M) = 1 through 10^7 selectable in decade steps. Dimensionless with positioned decimal.

With reference to period averaging, the specifications of the device include Range 0-20 MHz; Periods Averaged 1-10^7 Selectable in decade steps; Input Channel A; Frequency Counted 10 MHz; Accuracy ± 1 count and Display Micro sec. with positioned decimal., while time interval specifications are : range 1 micro sec. to 10^7 sec. input Channel A and B Frequency counted 10 MHz to 1 Hz selectable in decade steps, display micro sec. mill sec. or sec. with positioned decimal and Accuracy ± 1 count. All the raw materials are available indigenously except some integrated circuits and nixie tubes which are also likely to be available.

BULLET PROOF GLASS TO BE MANUFACTURED

India took a step forward in glass manufacturing technology when the production of bullet proof glass commenced for the first time in India by a unit in the line at Jaipur in Rajasthan.

M/s. Jeet and Jeet Glass and Chemicals, Private Limited, Jaipur is the firm which has undertaken the manufacture of this sophisticated glass variety in collaboration with a well renowned West German firm in the line - Isolar Glass. The Jaipur firm went on production stream in mid-April 1974.

The company will manufacture 4000 sq. metres ot bullet proof glass and 3500 square metres of isolating glass per year. The samples of trial production have already been approved.

India's glass industry has been producing a variety of glasses catering to the requirements of different fields. The production range includes bottles and vials (including semi-automatic), sheet glass, glass shells, vacuum flasks and laboratory glassware.

In 1973, in the organised sector, the production of various types of glasses was : bottles and vials 130,000 tonnes (installed capacity 265,5000 tonnes and number of units 23); sheet glass 15 million square metres (170 million square metres and 6 units); glass shells 150 million pieces (170 million pieces and 7 units); vacuum flasks 5.5 million numbers (4.5 million numbers and 3 units) and laboratory glassware 2081 tonnes (7200 tonnes and 1 unit).

India's total exports of glass and glassware totalled Rs. 27.88 million in 1972-73 as against Rs. 14.37 million in 1971-72. Of this, glass earned Rs. 12.68 million while glassware brought in Rs. 15.20 million.

In the first three quarters of 1973-74 (April-December 1973) the exports of glass and glassware earned Rs. 25.30 million as compared to nearly Rs. 20.25 million in the same period of the preceding year.

DIRECTION PATTERN OF INDIA'S EXPORT TRADE

(Rs. in million)

Region/Countries	1971-72	1972-73	April —	December
			1972-73	1973-74
E. C. M. Countries	**1238**	**2216**	**2981.80**	**4046.70**
Belgium	240	300	183.85	250 60
France	241	455	314.80	297.30
German Fed. Rep.	368	620	401.15	589.65
Italy	242	488	345.05	462.30
Netherlands	147	353	236.75	416.00
U. K.	1681	1719	1345.40	1855.65
Other West Europe	**330**	**524**	**101.25**	**155.50**
ECAFE Countries	**4228**	**5555**	**3493.95**	**4781.00**
Australia	279	259	189.50	346.86
Sri Lanka	212	79	67.55	60.25
Hong Kong	155	198	140.00	221.15
Iran	197	247	40.00	123.20
Japan	1817	2167	1549.20	2470.60
Nepal	284	350	252.90	189.80
New Zealand	103	82	67.60	93.95
Bangladesh	423	1572	591.30	346 85
Singapore	175	178	124.05	275.17
Rest of Asia and Oceania	**625**	**726**	**577.10**	**763.20**
Iraq	97	100	83.05	119.90
Kuwait	107	148	120.40	129.10
Saudi Arabia	111	121	98.75	150.75
Africa	**1319**	**1010**	**775.30**	**703.45**
A. R. E.	231	317	216.35	97.20
Kenya	78	55	50.95	71.65
Sudan	517	207	156.65	146.55
North America	**3022**	**3035**	**2295.45**	**2636.10**
Canada	394	282	220.95	223.05
U.S.A.	2628	2753	2074.50	2413.05
Latin America	**126**	**42**	**35.80**	**61.20**
East European Countries	**3435**	**4695**	**3419.00**	**3539.80**
Bulgaria	155	189	122.75	148.90
Czechoslovakia	304	460	328.45	270.65
German Democratic Republic	180	151	105.05	141.05
Hungary	155	122	93.90	179.10
Poland	199	442	295.75	315 90
Rumania	111	159	111.20	115.80
USSR	2087	3048	2266.90	2193.20
Yugoslavia	244	124	95.00	175.15
Total Exports	**16,031.50**	**19,544.50**	**13,874.00**	**16,887.40**

Includes adjustment for incomplete recording of exports to Bangladesh by Government Agencies in the initi stage of the trade.

Source : Director General of Commercial Intelligence and Statistics, Calcutta.

INDIA'S TRADE WITH INDONESIA

India has centuries old trade relations with Indonesia. India's exports to Indonesia which were of the order of Rs. 53 million in 1952-53 came down to Rs. 11 million in 1966-67 but picked up subsequently. During the five year period - 1968-73, Indian exports to Indonesia averaged Rs. 44 million (Rs. 53 million in 1972-73) and imports Rs. 2 million per annum (Rs. 3 million in 1972-73).

A comparison of Indian exports to Indonesia during 1968-69 and 1972-73 indicates that exports of iron and steel declined from Rs. 11.5 million in 1968-69 to Rs. 8 million in 1972-73. Jute goods were down from Rs. 7 million in 1968-69 to Rs. 4 million in 1972-73. The same was the position in case of tobacco (unmanufactured) exports of which were Rs. 4 million and Rs. 1.3 million respectively in the two years. However, transport equipment fetched Rs. 20 million in 1972-73 as against Rs. 4 million in 1968-69. Exports of machinery were valued at Rs. 2.6 million and Rs. 1.1 million respectively in the two years. New items introduced in the export list after 1968-69 were metal manufactures, chemicals and pharmaceuticals and art silk fabrics which earned Rs 1.5 million, Rs. 1.8 million and Rs. 4.0 million respectively in 1972-73.

Under transport equipment the biggest item of exports from India is bicycles and parts. The export increased from Rs. 3.7 million in 1968-69 to Rs. 19.3 million in 1972-73. This item, however, constituted only 15 per cent of Indoensia's total import of transport epuipment during the years 1968 and 1969 when the total imports amounted to US $ 50 and $ 60 million respectively. In 1968 and 1969 India's main competitors in Indonesian market were Japan, U.S.A. and West Germany. Another item under this group is trucks, buses and accessories. There is a good market for this item in Indonesia. Actually, lorries and trucks worth Rs. 900,000 were exported to Indonesia in 1970-71 but in subsequent years, exports were confined to vehicle parts only and that too at much reduced scale. India exported vehicle parts and equipment worthRs. 400,000 and Rs. 200,000 only in 1971-72 and 1972-73 respectively.

Exports of iron and steel from India to Indonesia constitute mainly bars, sheets, angles, tubes, pipes and fittings. Although the value of exports of these items rose to Rs. 17.8 million in 1969-70, it came down to a mere Rs. 4.2 million in 1971-72 but picked up again in 1972-73 (Rs. 8.4 million). This decline in exports in 1971-72 was mainly due to steep fall in exports of bars, rods in that year (Rs. 1 million).

Indonesia is likely to import larger volume of textile machinery to rehabilitate and increase existing capacity and to establish new factories in spinning weaving and finishing. There is much scope for India to improve upon her nominal exports of these items to Indonesia. In view of the importance of the industry to Indonesia and the high priority placed on its rehabilitation, textile machinery represents a real trade opportunity for Indian manufacturers and exporters. Italy, U. K. and Japan are the major suppliers to Indonesia.

The use of office machines is expanding in Indonesia. Though small, the market is worth watching. India exported office machines worth Rs. 300,000 in 1970-71 and Rs. 400,000 in 1971-72 but exports in 1972-73 came down to Rs. 200,000 only. Imports of office machines by Indonesia in 1967, 1968 and 1969 were $ 2.7 million, $ 2.0 million and $ 2.9 million respectively.

The exports of chemicals including pharmaceutical products to Indonesia were of not much significance so long. The main items of exports under this head were caustic soda solid and flakes. The exports of these items amounted to Rs. 1.8 million in 1970-71 but came down to Rs. 1.3 million in 1971-72. In 1972-73, however, new items like zinc oxide (valued at Rs. 1.1 million), potassium hydroxide and other lead oxides were added to India's export list.

So far as imports of pharmaceuticals products are concerned, India's share is negligible. India exported pharmaceutical products worth Rs. 200,000 only in 1969 as against the total imports of $ 10 million by Indonesia in that year. The prospects of exporting more Indian pharmaceutical products are encouraging. As drugs and medicines are a necessity, a population of 120 million would need a large total consumption of these items. More than half of Indonesia's requirements are at, present, being supplied by West Germany. East European countries Japan and Australia and lately Philippines has also entered the Indoensian market.

Hand tools like spanners, wrenches, files and rasps constitute the main components of exports from India under this head. The exports of these items rose from Rs. 300,000 in 1969-70 to Rs. 1.5 million in 1972-73. The export figures for 1971-72 however, were, higher at Rs. 1.8 million. Indonesia has large demand for these items in workshops, small industries, training institutions and other industries now coming up in that country.

Jute manufactures is an important traditional item of export registered a declining trend in the Indonesian market in last few years. In 1969-70, exports of jute manufactures were worth Rs. 0.6 million. In 1972-73, however, India could export jute manufacture worth Rs. 3.9 million to Indonesia. India had at one time almost a monopoly especially of sacks but now there is a strong competition from Thailand.

Tobacco (unmanufactured) is another important traditional item of export which also recorded a downward trend so far import from India by Indonesia is concerned. Exports of tobacco which stood at Rs. 3.8 million in 1968-69, steadily came down to Rs. 1.3 million only in 1972-73. Scope for India's higher exports may not be bright, particularly in view of PL 480 imports from USA by a number of countries including Indonesia. It is imperative that both the manufacturers and exporters should make a thorough market research in Indonesia and find out the reasons for this dwindling exports of Indian tobacco to that market.

Indian imports from Indonesia are only around Rs. 2 million per annum, the actuals in 1968-69 and 1972-73 being only Rs. 1.4 million and Rs. 2.7 million respectively. The major items are essential oils and spices. The low level of imports is explained by the fact that Indonesia at present has very few items to offer for exports to India. In fact, in case of certain items offered by them for export, India is herself an exporter.

Figures of exports for the complete year of 1973-74 are available only up to the month of January 1974. Exports from India to Indonesia during the first ten months (April 73 to Jan 74) stood at Rs. 148 million which were more than three times the level of Rs. 43 million attained in the corresponding period of 1972-73. The spurt in exports is quite encouraging.

Commoditywise figures of exports during 1973-74 are available only up to Dec. 1973. Out of the total Indian exports at Rs. 127 million during this period, sugar alone accounted for Rs. 72 million. Transport equipment fetched Rs. 11.5 million and machinery Rs. 5 million. The export value of paper and paper board was of the order of Rs. 3 million and that of chemicals Rs. 4.5 million. In textiles, the major items of exports were art silk valued at Rs. 8 million, cotton at Rs. 6.4 million and jute bags at Rs. 1.2 million. Iron and Steel exports fetched Rs. 2 million. Exports of cinematographic films during the period were at Rs. 2.7 million.

It would be noticed that exports of practically all the items to Indonesia have gone up during 1973-74. If the present trend continues, exports to Indonesia during the whole year would be of the order of Rs. 170 million which would be about three times of the level of Rs. 53 million reached in the previous year.

Apart from direct trade, India is also cooperating with Indonesia in the development of her Industries. ☐

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INDIAN KNOW-HOW FOR STEEL PLANT IN DUBAI

Comparatively a late entrant in the field of industrialisation, the Indian industry has to-day acquired requisite technical expertise and maturity even to be in a position to spare technical consultancy and engineering services for undertaking foreign assignments. In this context, a recent achievement of the Metallurgical and Engineering Consultants (India) Ltd. (MECON) is worth mentioning. In the wake of a visit of a delegation from MECON to Dubai, the firm has recently concluded a contract with United Arab Emirates for supply of technical assistance to set up a sponge steel complex in Dubai.

Initially a part of Hindustan Steel Ltd., as the Central Engineering and Design Bureau (CEDB), MECON emerged as a separate independent body in March last year. The main object of the company is to provide consultancy and engineering services for the development of ferrous and non-ferrous metallurgical enterprises and allied industries. It functions as technical adviser to the Department of steel in India on matters connected with the iron and steel industry.

The technical services provided by the company help save the country precious foreign exchange which may otherwise be payable as engineering fee to foreign firms for such jobs. For instance, the designing of the sixth blast furance at the Bhilai Steel Plant by the Company during the short period of its operation is estimated to have saved the country about Rs. 25 million in foreign exchange. Among other jobs, MECON have prepared the detailed project report for the expansion of the Bhilai Steel Plant from 2.5 to 4 million ingot tonnes and a feasibility report for further expansion of the plant to 7.2 million ingot tonnes.

Currently, one of the main assignments of MECON is to took after the design and engineering aspect of the expansion of Bokaro Steel Plant from its first stage of 1.7 million to 4 million ignot tonnes. It is also associated with a number of new capital schemes including those for additional facilities aimed at optimising production at the Steel Plants of the Hindustan Steel Ltd. It has also been entrusted with detailed engineering for the additional coke oven battery at Bhilai and one half-battery each at Rourkela and Durgapur. The company is also serving as consultants to Bharat Aluminium Co. Ltd., and to Indian Iron and Steel Co. Ltd.

MECON have also received orders for the design and supply of a cold rolling mill for M/s. Ahmedabad Advance Mills, Bombay, roll pass and guide design for the existing mill at the Defence Metallurgical Research Laboratory, Hyderabad; Inter-changeable mandrel for skin pass mill at Rourkela; flying shear complete with electronics for double strand rolling mill at Durgapur and a cold rolling mill for the Government mint in Bombay.

POWER CABLES TO MALAYSIA

Adding to the number of recent export orders bagged by the Indian cables and wires industry, M/s. Indian Cable Co. Ltd., (INCAB), 9, Hare Steet Calcutta, have lately concluded a contract for supply of 26 KM 11,000 volts aluminium conductor paper insulated power cables with the Sarawak Electricity Supply Corporation, Sarawak. Malaysia. The order is valued at Rs. 2 million.

Export turnover of INCAB during 1972-73 was of the order of Rs. 16.60 million. Since its inception in 1967, the firm's total foreign exchange earning till end March, 1973 amounted to Rs. 60 million. Their products are particularly popular in West Asian Countries, such as, Kuwait, Abu Dhabi, Jordan, Sudan and Mauritius.

The production profile of INCAB includes PVC power cables, PVC insulated self bearing cables, PILC cables for power transmission and distribution, heat resisting PVC power cables (in the range of 1.5 m.m.^{2} to 1600 m.m.^{2} upto 1.1 KV grade). Recently, the firm was credited with a major breakthrough in the field of PVC insulated power cable with a working voltage of up to and including 11KV unearthed system. The Company's 11 KV Paramite P.V.C. insulated cable, developed after several years of research at its P.V C compounding and extrusion plants at Tatanagar, has passed a crucial technical test, called the "Partial Discharge Test". It detects the minutest discharge in the cable which if corrected at the manufacturing process, greatly enhances the cable life.

The cables and wires industry in India constitutes a significant segment of the engineering goods sector in India. Its export earning which totalled only Rs. 16.77 million in 1967-68, rose to a level of Rs. 126 million in 1972-73, according to the Engineering Export Promotion Council, Calcutta.

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INDIAN CONSULTANCY SERVICES FOR CEMENT PLANT IN BHOOTAN

India is to supply consultancy services for setting up a cement plant in Bhootan. An agreement to this end was signed recently at Thimpu between the Cement Corporation of India (CCI) and the Pagli Project Authority of Bhootan.

The proposed plant's capacity to produce cement has been estimated at 100,000 tonnes for a year while cost of the project has been estimated at Rs. 70 million. The Cement Corporation of India is to provide consultancy services for setting up this plant at Pagli in Bhootan. Apart from meeting domestic requirements, the plant would also supply sizeable quantities of cement to adjoining Indian border states of West Bengal and Assam.

India is already exporting cement in large quantities to number of countries abroad. Apart from this, the consultancy sector of the cement industry with the backing of sizeable experience and technological expertise in the field of cement manufacture is poised to offer consultancy services to countries abroad, particularly, to the co-developing economies.

India's export trade in cement totalled over Rs. 50 million in 1972-73. Of this, portland grey variety accounted for the bulk at Rs. 50 million. Hydraulic cement and portland white were the other two types of cement exported during the year. Bangladesh was the bulk importer during the year which imported portland grey variety at a cost of Rs. 35.77 million alone. Among other buyers, Nepal at Rs. 11.31 million was significant.

Additionally, cement products, such as, asbestos cement pipes, sheets and tiles, refractory cements and other articles of asbestos cement were also exported.

During the first three quarters of 1973-74 (April-December 1973), the exports totalled over Rs. 17.40 million. Portland grey variety constituted the prime category of cement which fetched as much as Rs. 17.40 million. Besides, other cement products, such as, asbestos cement pipes (Rs. 1 million), asbestos cement sheets (Rs. 3 million), asbestos cement tiles, refractory cements, hydraulic cement and other articles of hydraulic cement were supplied abroad.

Bangladesh, Nepal, Dubai and Qatar were the leading importers of portland variety while Abu Dhabi, Dubai and Qatar were the principal buyers of asbestos cement products.

EXPORT SUCCESS IN COTTON TEXTILES

Exports of Cotton Textiles from India were up at Rs. 2045 million in the first three quarters of 1973-74 (April-December 1973) compared to Rs. 1256 million in the corresponding period of the preceding year. Of this, Cotton fabrics (mill-made) earned as much as Rs. 1173 million in April-December 1973 against Rs. 598 million only in the same period of 1972-73. Handloom fabrics improved their export value to Rs. 258 million during the period from Rs. 146 million while readymade garments doubled their performance to Rs. 376 million from Rs. 188 million. Other made-ups of cotton, such as, bedcovers and towels fetched Rs. 206 million as against Rs. 146 million. The same trend was noticeable in case of hosiery which brought in Rs. 15 million compared to Rs. 7 million. In the full year of 1972-73, the export value of cotton textiles amounted to around Rs. 1605 million which was well above the target of Rs. 1410 million set for the year.

India-made cotton textiles find their way to almost all countries of the world. Major buyers include Afghanistan, Saudi, Arabia, Bangladesh, U.K. and other EEC countries, Sweden, USSR, Poland, Canada, Australia, New Zealand, USA, Federal Republic of Germany, France and Czechoslovakia

Contributing to the export effort in the line, M/s. Mafatlal Industries, Bombay, succeeded in stepping up their exports to Rs. 24 million in 1973-74 from Rs. 13.80 million in the preceding year. Apart from its export endeavour, the company is also going ahead with its modernisation and expansion programmes. In 1973-74, it spent about Rs. 6 million on replacement of plant and machinery in its Textiles Division. It plans to spend another Rs. 1 million this year. It has also initiated steps to amalgamate its subsidiary, Sahyadri Dyestuff and Chemicals.

Production of cotton textiles in India reached a peak level of 8022 metres in 1972 as against 7357 million metres in 1971. During Jan-June 1973, it totalled 3590 metres. Of the total production in 1972, the mill sector accounted for 4,245 million metres (534.65 million kgs) while the share of decentralised sector was of the order of 3777 million metres.

The industry had in its infrastructure 688 mills comprising 398 spinning mills and 290 composite mills (July 1973). The installed capacity of both the categories of mills totalled 18.45 million spindles. Of this, the spinning mills had a total installed capacity of 6.20 million spindles while that of composite mills was about 12.25 million spindles. In all, the industry had 206,295 looms installed.

EXPORT PERFORMANCE AND POTENTIAL

INDIAN EXPORTS IN 1973-74

India's exports recorded a rise of about 23 per cent in 1973-74 over the level attained in 1972-73. The rate of rise compares very favourably with 22 per cent rise recorded in 1972-73 and only 5 per cent recorded in 1971-72. The actual exports during 1973-74 were valued at Rs. 2.41 billion against Rs. 1.96 billion in 1972-73, Rs. 1.61 billion in 1971-72 and Rs. 1.54 billion in 1970-71. The camulative rise in three years in 1971-74 was thus 57 per cent over the level of exports in 1970-71.

The detailed commoditywise break up of the exports is available only upto February 1974. It is noticed that exports of most of the major items have improved during 1973-74. In some items, such as, sugar, vegetables, feeding stuff for animals, oil seeds, silk, chemicals, wood manufactures, textile fabrics of silk and art silk and railway track material, the exports have doubled or trebled as compared to the levels attained in the preceding year.

Exports of sugar in the first eleven months of 1973-74 (April '73-Feb. '74) were valued at Rs. 348 million as compared to Rs. 103 million in the corresponding period of 1972-73. Vegetables, fresh or simply preserved, earned Rs. 55 million (Rs. 27 million in the preceding year). The value of feeding stuff for animals exported in 1973-74 was Rs. 1574 million (Rs. 589 million in 1972-73). Exports of oil seeds during 1973-74 were Rs. 221 million (Rs. 42 million), silk Rs. 23 million (Rs. 7 million), miscellaneous chemicals Rs. 19 million (Rs. 9 million), wood manufactures Rs. 37 million (Rs. 12 million) and silk & art silk fabrics Rs. 301 million (Rs. 139 milllion).

Exports of commodities which recorded a sizeable increase, between 20 per cent and 100 per cent, in 1973-74 (upto February '74) are, fish Rs. 748 million (Rs. 489 million in 1972-73), rice Rs. 29 million (Rs. 19 million), coffee Rs. 421 million (Rs. 287 million), spices Rs. 430 million (Rs. 245 million), rough wood Rs. 153 million (Rs. 88 million), wool Rs. 76 million (Rs. 59 million), cotton Rs. 323 million (Rs. 234 million), ores of non-ferrous metals Rs. 170 million (Rs. 134 million), fixed vegetable oils Rs. 289 million (Rs. 187 million), chemical elements and compounds Rs. 22 million (Rs. 17 million), medicinal and pharmaceutical products Rs. 124 million (Rs. 85 million), plastic material Rs. 12 million (Rs. 6 million), paper and paper board Rs. 55 million (Rs. 39 million), cotton textiles Rs. 2072 million (Rs. 1169 million), pearls and precious stones Rs. 880 million (Rs. 674 million), iron and steel Rs. 487 million (Rs. 364 million), copper Rs. 52 million (Rs. 42 million), machinery other than electric Rs. 388 million (Rs. 257 million), ready made garments Rs. 803 million (Rs. 484 million), toys, games and sport goods Rs. 35 million (Rs. 26 million), works of arts Rs. 252 million (Rs. 171 million), jewellery and silver ware Rs. 33 million (Rs. 25 million) and crude animal and vegetable material Rs. 620 million (Rs. 463 million).

The items which recorded only moderate increase in exports i.e. below 20 per cent, are fruits and nuts Rs. 757 million in 1973-74 (upto Feb. '74) (Rs. 676 million in 1972-73), iron ore Rs. 1176 million (Rs. 1024 million), dyeing and colouring material Rs. 96 million (Rs. 88 million), rubber manufactures Rs. 75 million (Rs. 65 million), floor coverings Rs. 282 million (Rs. 238 million), metal manufactures Rs. 320 million (Rs. 272 million), electrical machinery Rs. 241 million (Rs. 210 million), transport equipment Rs. 298 million (Rs. 260 million), and cine films Rs. 47 million (Rs. 45 million).

Some items like tobacco, tea and jute goods, petroleum products and leather have recorded marginal decrease in exports during 1973-74. Actual figures of exports in 1973-74 (upto Feb. '74) for tobacco are Rs. 598 million (a little over Rs. 598 million in 1972-73), tea Rs. 1334 million (Rs. 1396 million), jute goods Rs. 2071 million (Rs. 2305 million), petroleum products Rs. 95 million (Rs. 102 million) and leather Rs. 1488 million (Rs. 1494 million).

Directionwise, exports to all the regions have gone up except to Africa. Exports to North America in 1973-74 (upto February 1974) were Rs. 3263 million (Rs. 2740 million in April 72–Feb. 73), other American countries Rs. 121 million (Rs. 60 million), ECAFE region Rs. 6343 million (Rs. 4320 million) other Asian countries Rs. 1014 million (Rs. 674 million), East European countries Rs. 4282 million (Rs. 4194 million), European Common Market Rs. 5108 million (Rs. 3630 million), other European countries Rs. 416 million (Rs. 344 million). Exports to Africa fell from Rs. 947 million in 1972-73 (upto Feb. '73) to Rs: 850 million in 1973-74 (upto Feb., '74).

The first four major buyers were Japan, USA, USSR and UK in that order. Japan imported goods valued at Rs. 3157 million upto Feb. 1974 against only Rs. 1948 million in the corresponding period of 1972-73, a rise of over 60 per cent. Exports to USA during this period of 1973-74 were Rs. 2995 million (Rs. 2490 million in 1972-73). The value of exports to USSR was Rs. 2621 million in 1973-74 (Rs. 2761 million in 1972-73). UK increased its offtake from Rs. 1556 million in 1972-73 (eleven months) to Rs. 2260 million in 1973-74, an increase of about 45 per cent.

MORE FOREIGN EXCHANGE FROM MACHINERY AND TRANSPORT EQUIPMENT

India's export trade in machinery and transport equipment has revealed signs of considerable improvement during 1973-74 as compared to the preceding year. In the first eleven months of 1973-74 (April-73-February 74), the exports fetched Rs. 726.94 million as compared to Rs. 688 million in the same period of 1972-73.

In the non-electric machinery sector, the areas of export dynamism proved to be power generating machinery, office machines, metal working machinery, textile and leather machinery and machines for special industries. Agricultural machinery and implements also marked a fair improvement. In the period under review (April 73-February 74) power generating machinery earned foreign at exchange Rs. 108.8 million as compared to Rs. 76 million in the same period of the year that preceded. Export trade in office machines fetched Rs. 77 million as compared to Rs. 16.6 million while metal working machinery secured Rs. 25.2 million against Rs. 16.3 million. Textile and leather machinery sector also witnessed growth, though marginally, to the tune of Rs. 45.52 million against Rs. 42.76 million.

Almost the entire range of electric machinery and apparatus and appliances was in keener demand during 1973-74 than during the year before. Overseas supply of electric power machinery and swtichgears rose to Rs. 63 million and Rs. 48.5 million in the respective periods under review. Telecommunication apparatus fetched Rs. 36.5 million as compared to Rs. 25.5 million. Domestic electric equipment also netted more worth nearly Rs. 26 million as compared to Rs. 25.7 million. Export trade in the equipment for distributing electricity, however, fell to Rs. 56 million from Rs. 63 million.

India's export trade in railway vehicles too looked up - Rs. 56 million against Rs. 36 million. Likewise export trade in road vehicles other than motor vehicles rose to Rs. 117 million against Rs. 94.6 million. The export value of road motor vehicles was marginally down at Rs. 119 million as compared to Rs. 126 million.

CHEMICALS AND ALLIED PRODUCTS EXPORT UP

The exports of chemicals and allied products falling under the purview of the Chemicals and Allied Products Export Promotion Council (CAPEXIL), Bombay, have reached an all time high during 1973-74. The export value in the year was estimated at Rs. 460 million as compared to Rs. 407 million in 1972-73 and Rs. 333 million in 1971-72 which reflects an average growth rate of 19 per cent. The over all export performance would have been still better but for certain production and export constraints, among other things.

Most of the items improved their overseas offtake sizeably during the year. In some areas of export, particularly, in respect of plywood, crushed bones, ceramics and paper and paperboard even the targets set for these individually have been surpassed. In the same year, exports of rubber goods, auto tyres and tubes, glass and glassware, refractories and processed minerals, and paper products showed improvement over their export value in the preceding year. The export performance in respect of paints, miscellaneous products and footwear, however, declined substantially during the year.

Plywood and allied product exports shot up sizeably to Rs. 46 million in 1973-74 from the export value in 1972-73 at only Rs. 17 million and contributed to the extent of 50 per cent to the overall increase in exports in the year. Crushed bones and allied products also fared well having earned more - Rs. 85 million against Rs. 66 million. Apart from these principal products, other items like bicycle tyres, bettings, hoses, synthetic resins, printing inks, glass bottles and containers, clinical thermometers, vacuum flasks, sanitarywares and tiles, asbestos fraction materials, glue, cellophane paper, carbon paper, stencils, exercise books, printing and writing paper and baryets also improved their exports during the period under review.

The Chemicals and Allied Products Export Promotion Council has set the export target at Rs. 500 million for the following year (1974-75). By the end of the Fifth Plan, the target would be fixed at Rs. 710 million.

GEMS AND JEWELLERY EXPORTS SCALE NEW HIGH

The export of gems and jewellery from India have exceeded the target for the second year in succession, when according to provisional estimates the exports reached a record figure of Rs. 1050.50 million.

The increase in the export of precious and semi-precious stones, diamonds as well as imitation jewellery was quite substantial ranging from 50 per cent to almost 150 per cent. The overall increase in the export of all gems and jewellery items during 1973-74 was of the order of Rs. 331.60 million over the previous year's export of Rs. 718 80 million.

The export earnings of gems and jewellery during the last three years have been rising substantially. During 1971-72, for instance, the export of gems and jewellery from India amounted to Rs. 470 million against India's total exports of Rs. 16,050 million, accounting for 3 per cent in the total exports. India's total exports reached Rs. 19,600 million during 1972-73 in which the share of gems and jewellary exports was of the order of Rs. 720 million which was 3.65 per cent of the total exports. For the year 1973-74, India's total exports are estimated at Rs. 23,620 million in which the share of gems and jewellery rose to Rs. 1050.50 million which is almost 4 5 per cent of the total exports. Thus, the exports of gems and jewellery from India increased by about 53 per cent during 1972-73 over that of 1971-72 and by about 46 per cent during 1973–74 over the previous year.

The Government of India have fixed the export target for 1974-75 at Rs. 1250 million.

Diamonds continued to be the foremost foreign exchange earners during 1973-74, having fetched as much as Rs. 861.60 million, the highest ever. In the preceding year, their exports were of the order of Rs. 589.60 million. Thus, the exports in 1973-74 registered increase to the tune of Rs. 272 million over that in 1972-73. Precious and semi-precious stones constituted the second best active item in exports which improved their offtake by nearly 50 per cent during the year over their exports in 1972-73. From Rs. 104.60 million in 1972-73, the exports shot up to Rs. 155.70 million in the year under review. The exports of imitation jewellery during 1973-74 registered more than 100 per cent increase to Rs. 20.79 million from Rs. 8.67 million in 1972-73.

In fact, all the above items well off set the decline in the exports of gold jewellery, pearls and synthetic stones during the year under review. The exports came down to Rs. 5.39 million (1973-74) from Rs. 5.95 million (1972-73) in respect of gold jewellery, to Rs. 6.60 million from Rs. 9 53 million in the case of pearls and to Rs. 0.42 million from Rs. 0.48 million in regard to synthetic stones.

Countrywise exports of gems and jewellery indicate that the USA was the largest buyer which bought worth over Rs. 209 million. Hong Kong closely followed USA at Rs. 207.80 million, Belgium Rs. 180 million, Japan Rs. 102.30 million and UK Rs. 56.60 million. Besides these major buyers, Netherlands at Rs. 48 45 million, Switzerland at Rs. 47.73 million, France at Rs. 41 million, Singapore at Rs. 38 million, Israel at Rs. 27.82 million, Federal Republic of Germany at nearly Rs. 21 million and Australia at Rs. 11.65 million were the other significant markets.

Regionwise, ECAFE accounted for the bulk of Indian supplies at Rs. 366 million. In the region, the prominent buyers included Hong Kong (Rs. 102.27 million), Japan and Singapore European Common Market constituted the next best importing region which purchsed worth Rs. 352.70 million. Belgium was the largest buyer in the region at Rs. 179.95 million, followed by UK at Rs. 56.63 million, Netherlands Rs. 49.45 million, France at Rs. 41 million and Federal Republic of Germany at nearly Rs. 21 million.

Apart from these two regions, North America (Rs. 211.65 million), EFTA (Rs. 50.95 million) and Other Asian and Oceanian countries (Rs. 43.40 million) constituted the important regions which imported Indian gems and jewellery in sizeable quantity.

SUGAR EXPORTS MORE THAN TREBLED

India's export trade in sugar and sugar preparations has received a sizeable boost in recent months. The export value rose by more than three times from Rs. 102 million to Rs. 347 million in the first eleven months of 1972-73 and 1973-74, respectively. The value of these exports was of the order of only Rs. 139.16 million during the entire year of 1972-73.

The major improvement during 1973-74 was due to the larger offtake of refined canned sugar whose export value was as much as Rs. 216 million in the period under review in the year. Indonesia was the most significant buyer (Rs. 117.4 million). In terms of quantity, about 109,275 tonnes were supplied overseas in which Indonesia's intake was of the order of 59,770 tonnes. Next to Indonesia, the major buyers were Bangladesh, Iran and Kuwait.

Centrifugal sugar was another variety whose export performance has considerably improved. The U.S. market purchased worth Rs. 79 million while U. K. bought worth nearly Rs. 28 million. In all, the export value of centrifugal sugar was of the order of Rs. 107 million.

Cane jaggery is yet another category of export growth. With U. K. and Nepal as the principal customers, this item netted Rs. 1.25 million during the period under review in 1973-74. Of this British purchases amounted to Rs. 0.6 million while the Nepalese imports were of the order of Rs. 0.34 million.

Non-centrifugal sugar also proved to be an important growth point having brought in foreign exchange worth Rs. 19.24 million. Indonesia was the most important buyer of this variety. Edible molasses, natural honey, solid and liquid glucose and palm sugar were the other varities that India's sugar Industry has successfully exported to world markets.

In addition, sweatmeat and other confectionery as well as flavoured and coloured sugar syrup molasses also figured in the export trade.

EXPORT TRADE IN IRON ORE AND CONCENTRATES

As compared to Rs. 10323.6 million earned in the first eleven months of 1972-73, India's export trade in the same period of the subsequent year improved its offtake by 15 per cent to the level of Rs. 1176.3 million. The improvement in the iron ore exports was essentially due to the sizeable offtake of black iron ore with 10 percent Mn content. This variety of iron ore was exported to the tune of 20.49 million tonnes and fetched Rs. 1131 million during the first eleven months of 1973-74. The traditional buyer, Japan, absorbed as much as 16.54 million tonnes at a value of Rs. 914 million. Next in importance was the purchase of Rumania (1.78 million tonnes) at Rs. 93.50 million. Among other prominent buyers were Czechoslovakia, Poland, Bulgaria and Korea Republic.

An amount of 0.55 million tonnes of iron ore concentrates was also exported during the period under review to fetch Rs. 45.36 million.

Besides iron ore and concentrates, Indian exports of iron and steel scrap rose to the level of Rs. 26.7 million during April-February 1973-74 as compared to Rs. 10 million in the same period of the preceding year. Export trade in ores and concentrates of non-ferrous base metals fetched Rs. 169.86 million as compared to Rs. 133.9 million and that of non-ferrous metals scrap Rs. 2.22 million as compared to Rs. 1.35 million in the periods.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PRODUCTION TREND IN ELECTRIC MOTORS

Mainly used as essential component in most of the equipment that are run electrically, electric motors have assumed significance in the industrial profile of India. With the rapid development of industrial sector of Indian economy, the electric motor industry expanded sizeably owing to growing requirement of electric motors for the manufacture of electric equipment and other industrial items.

At present, the industry is geared up to undertake manufacture of a variety of motors, such as, loom motors, ring frame motors, double and multiple speed motors, flame proof motors, high torque motors, geared motors, slipring motors and traction motors. These are suitable for a number of industries, such as, textile, sugar, chemical, mining, cement, rolling mills, boiler feed pumps, material handling equipment, industrial machinery and machine tools.

The production of electric motors in the organised sector during 1973 was maintained at 1972's level despite a number of bottlenecks faced by the industry at various stages of manufacture. The output was of the order of 3.03 million h. p. as against 3.04 million h. p. in the respective years. The installed capacity of 33 units in 1973 was 5.46 million h. p. as compared to 3.1 million h. p. as on 1st April 1972, and 5.45 million h. p. as on 31st December 1972. In 1971, the production was only 2.60 million h. p. The analysis of production on the basis of horsepower indicates that the production of electric motors above 20 h. p. has increased whereas those of smaller sizes required mainly for agricultural purposes has gone down considerably. The units in the public sector have to their credit manufacture of electric motors of large sizes and also have capability to undertake manufacture of motors even upto 10,000 h. p.

The Indian Government follows a liberalised industrial licensing policy in this area of manufacture. This has helped the industry to add some new units to its infrastructure and to raise the installed capacity substantially.

Like other engineering industries in India, electric motor industry also achieved considerable progress in the field of import substitution. Already a number of units engaged in the production of electric motors upto 50 h. p. have substituted copper wound rotors with aluminium cast rotors.

The raw material required for the manufacture of electric motors include deep drawn quality MS sheets, CRGO sheets, alloy steel shafts, bearings, CRCA sheets, electrolytic copper and aluminium, mica films, capacitors and relays. Of these, some are available indigenously while quite a few are required to be procured from abroad.

The industry is equally active in the field of exports also. During 1972-73, the exports amounted to Rs. 8 million. A.C. squirrel cage induction motors are exported in the range of 1 to 100 h. p. and above. In the range of 1 to 20 h. p. this variety of motors has contributed an export earning of Rs. 1.4 million. The supplies were made mainly to Sudan, New Zealand, Malaysia, Fiji Islands and Kenya. AC squirrel cage induction motors in the range of 20 to 50 h. p. were mainly imported by the Federal Republic of Germany. This market bought worth over Rs. 2 million out of total exports of this variety of Rs. 2.9 million. For the range of induction motors above 50 h. p., Iraq and Turkey constituted the principal buyers. AC slippring motors upto 100 h. p. and A.C. single phase motors were also active in exports during the year.

During 1972-73, the entire group of electrical power machinery and switchgear earned as much as Rs. 56 million. Apart from electric motors, the other major export lines in the year included transformers, circuit breakers, motor starters, switchgears and controlgears.

ON INDUSTRIAL EXPLOSIVES

Open for further licensing as also for foreign collaboration, the industrial explosives industry occupies a significant place in the Indian economy. Included in priority sector, the industry comprises two units, both in the private sector, namely M/s. India Detonators Limited, Hyderabad, (Andhra Pradesh) and M/s. Indian Explosives Limited, Hazaribagh (Bihar). These firms are manufacturing explosives of different types in financial and technical collaboration with USA and UK, respectively.

The licensed capacity of the industry is placed at 28,600 tonnes while the installed capacity at 47,000 tonnes is much more than the licensed capacity. Besides, additional capacity to the tune of 16,000 tonnes has already been approved. Thus, the total licensed capacity likely to have materialised by the end of 1973-74 would be equal to the installed capacity (47,000 tonnes).

The industry's total production of explosives is constantly registering improvement from year to year. From only 22,800 tonnes in 1967, the production improved to 26,100 tonnes in 1968, 28,900 tonnes in 1969, 27,970 tonnes in 1970, 32,320 tonnes in 1971 and 33,371 tonnes in 1972. The production in 1973 in the organised sector, however, declined owing to some constraints at production level. In the year, output of commercial explosives was 30,360 tonnes (installed capacity 28,600 tonnes) as against 32,666 tonnes in 1972. The output of detonators, however, improved during the year - 143 million numbers against 116 million numbers (installed capacity 168 million numbers), detonating fuses, the production of which was 6.20 million metres in 1972 were manufactured in much less quantity during 1973 at only 0.80 million metres. The production of safety fuses was more or less maintained at the level of 1972—8.70 million coils in 1973 against of 8.83 million coils in 1972. The indigenous production is just sufficient to meet the demand.

The demand for explosives for the year 1973-74 was estimated at 59,000 tonnes. Raw material mix required for production of explosives includes a variety of chemical products. In these, Ammonium nitrate, nitric acid, sulphuric acid, glycerine, foluene, nitro cellulose and aluminium powder are available indigenously. However, some chemical products, such as, sodium nitrate and sulphur are required to be imported. The imports are effected normally through the State Trading Corporation (STC) for meeting the requirement of actual users.

Though on a limited scale, India has entered into the exports of explosives and pyrotechnic products. During 1972-73, the industry's export earning was of the order of Rs. 3.75 million as compored to Rs. 2.20 million in 1971-72. During the first three quarters of 1973-74 (April-December 1973), the exports nearly fetched Rs. 2.80 million.

The export range includes industrial explosives (non-permitted type), detonating fuses, safety fuses, detonators containing explosives (electrically ignited and non-ordnance), plain detonators and sparklers (pyrotechnical articles). Singapore, Iraq, Iran, Jordan, Sri Lanka and Nepal are the principal importing destinations.

NEW SCHEME TO SAVE FERTILISERS

A novel scheme to counter the shortage of fertilizers so far as rice production was concerned, has been recently mooted by the Indian Council of Agricultural Research (ICAR).

To this end, the way suggested by the ICAR envisages raising of paddy seedlings by farmers collectively in Community nurseries instead of individually. This should be done by pressing into service the available irrigation resources like wells or tube-wells or tanks, well before heavy rains set in. It would permit advancing of the time of planting of paddy and thus improving yield by minimising the problems originating from poor water control and incidence of pests and diseases.

Community nurseries also permit introduction of several input saving devices, such as, seed bed production which minimise the hazard of tungo-epidemic, and can be accomplished at a relatively low cost in these nurseries. This and other suggestions, adding up towards new combination of agricultural practices have been made in a ICAR note for guidance of State Governments and farmers. According to the note, the Fifth Plan target of 54 million tonnes rice (against the Fourth Plan achievement of 42 million tonnes) could be achieved provided there was full exploitation of the potential and the flexibility of the new technology, efficient use of scarce input, a greatly stepped up extension effort and a fostering of community action.

The high yielding varieties of paddy were catching up in farm usage and their demand was increasing. The note further suggested a selective spread of high yielding varieties which could be procured. Dwarf varieties have been advised for areas not prone to submersion. The State-by-State and for some States, area suggestions have been given in the note in regard to varieties most suited to them. The general approach suggested pertained to propogation of high yielding varieties under moderate levels of fertilization and even under unfertilised conditions.

INDIA'S NUCLEAR POWER PLANTS

Notwithstanding various problems faced by the Indian Power Plants in the recent past, a sizeable progress achieved by them recently indeed proves the capability of Indian expertise in the field. The progress was achieved mainly because of strenghthening infrastructure and greater input of indigenous material and process.

The power plants located at different places in the country rectified their defects and commenced generation at an enhanced rate. For instance, the design - related weaknes of the Tarapur nuclear power station has been fully rectified and its generation which was 1132 million KWH in 1972-73 increased to nearly 2000 million KWH in 1973-74.

Similarly, the unit I of the Kota Atomic Station which used to remain sick most of the time is operating at power level of 135 MWE to 140 MWE. It is supplying 3 million units daily on average since mid-December, 1973 bringing daily revenue of Rs. 300,000.

Construction of the Unit II of this power plant is progressing fast - reactor vessel and end - shields are being installed. Fuelling machine head for the unit II has been manufactured in India itself. This extremely sophisticated item comprising more than 500 components was fabricated at the Bhabha Atomic Research Centre (BARC) from designs supplied by Canada.

In the Rajasthan Atomic Project, cobalt facility project is nearing completion and is expected to be commissioned with in the next few months.

Reactor vessels which are required for the Madras Plant are also being manufactured indigenously. The reactor building including perimeter wall and dome of the unit 1 have been completed. The turbine building service wing, 220 KW indoor switchyard, demineraliser plant building, fire and filtered water pump house, ring raft for perimeter wall of reactor building and suppression pool raft are ready. Besides, intake tunnel is being lined. Land is being acquired for India's fourth nuclear Power Station which is being erected at Narora in Bulandshahr District in Uttar Pradesh. The plant lay-out of the project is nearing completion.

With a view to make India self-sufficient in the matter of heavy water which is required by the nuclear power stations in the country, work is progressing rapidly on four heavy water plants located at Kota, Baroda, Tuticorin and Talcher with a capacity to produce 300 tonnes of heavy water. The Baroda plant is almost ready and awaits commissioning. The Tuticorin plant is scheduled to be commissioned shortly and the Kota plant in the first quarter of 1976. The Talcher plant is also expected to be ready by middle of 1976.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

WIND MILLS FOR VARYING WIND SPEED

The National-Aeronautical Laboratory, Bangalore, has designed and developed two types of windmills-the WP-1 type suited for windier regions like Gujarat and the WP-2 type suited for moderate wind speeds - for pumping water for drinking purposes and minor irrigations. These can now be taken up for large scale fabrication and installation.

The importance of utilizing such sources of energy as wind and solar power and thereby conserve fuels and other exhaustible sources of power is now well recognised. There is ample scope for wind power utilization in India. The windmills can be employed to lift water in villages and supply it for drinking under the Rural Water Supply Scheme as well as for minor irrigation. Increased food production requires facilities of irrigation. The windmills can play an important role as no electricity-or other source of power is required. A windmill requires practically no maintenance and no skilled person to look after it. The present installations of the windmills have produced an impact on the village communities and there is a good demand for these in the country.

The WP-2 type windmill can lift about 800 gallons of water through a total lift of about 35 to 40 ft. at a wind velocity or 8 m.p.h. or more. These machines are having standard 6″ dia. x 5″ stroke or 4″ dia. x 5″ stroke reciprocating pump sets. If the total lift is limited to 12 feet to 15 feet; 12″ dia. pump installations can be incorporated in the said windmill set (with slight modification in the bearing, bushing, connecting rods, etc.) and the machine is likely to yield more than 1800 gallons of water per hour at a wind velocity of 9 to 10 mph or more.

As the sea-coast areas producing salt, mostly require pumping of concentrated brine through low heads to fill-up the salt pans, these windmills which are likely to run day and night on sea-coast can meet the requirements of salt manufacturers quite economically. However, the tower and other ferrous parts of the machinery may have to be given some better corrosin resisting protection (viz. galvanizing, parkerising etc.) to withstand the high corrosive atmosphere of the sea-coast.

A WP-2 windmill with 6″ dia. pump set was installed at Bengal Salt Works, Contai, West Bengal, in 1964 and except for its low discharge rate (because 6″ dia. pump) was found to be pumping brine faithfully.

PROCESS FOR THREAD COUNTER DEVELOPED

Central Scientific Instruments Organisation, Chandigarh, has developed a process for the manufacture of Thread Counter (Microscopic Type). This instrument is used to determine the density of warp and yarns in single weave cloth, not raised or filled and can be determined in a lenght of 5 mm. or less.

For the determination of yarn density in cloth, this apparatus provides easy and rapid counting of warp and weft yarns per unit length. The apparatus is also suitable for testing the uneveness of cloth. Cloth of any size can be tested by means af trans-illuminated light from below or by controlled incident light from above.

Microscopic technique is used to investigate the cloth density. Cloth of low density is viewed through the microscope with the help of trans-illuminated from above and examined in reflected light.

The apparatus has five main parts including cloth trans-illuminating box, cloth moving device, top plate, microscope carriage and microscope.

Cloth trans-illuminating box is an aluminium alloy casting with a well-ventilated bottom, housing two milky white bulbs of 25/15 Watts, 220/230 Volts. Two transformers are also provided inside the box to feed the two incident spot light of 6 volts, fitted on the clamping plate. The top of the box has a glass covered window of 76 x 25 mm. size and a sliding pocket to insert coloured glass filter when there is need for stressing the contrast between weak or partly washed out colours. On the front panel of the box, four light switches are provided to work the two 220 Volts and two 6 volt bulbs

Cloth moving device : at the top of the illuminating box is attached a device which can move the sample cloth strip to and fro for inspection. This is done by rotating the two knobs fittted on the device. A sliding pocket for filter glass is also fitted below the device which can hold glass plate of required shade for viewing the sample in coloured light.

Top plate : the case aluminium top plate has a rectangular window of the same size and located just above the one as provided on the illuminating box, having a glass plate graticule 0-50 mm scale. Sample cloth is held in between these two glass plates and viewed through the microscope. The upper side of the plate has two incident light sources fitted with potentiometers to control the intensity of light by turning the knobs in the required direction. The light sources are adjustable to very oblique angle to emphasize the roughness of the sample surface and eliminate shadow effect. Where the weave of the sample material is fairly open it will often be found useful to supplement top-illumination with light from bottom. However, the bottom light along will be found suitable for medium weave cloth.

Microscope carriage is moved along the glass scale, fixed on a guide device, attached to a screw spindle of 1 mm pitch. The turning knobs have a graduated drum with 20 divisions on its circumference so that 1/20 mm could be read with convenience. In addition to glass scale, another metal scale 0-50 mm has been provided on the carriage for counter check. There is arrangement for preventing back lash error with the help of an adjusting screw provided under a cap on the front-side of the carriage.

Microscope is of standard tube length of 160 mm and embodies standard size eye pieces of 5 x and 10 x with crosalines and a double objective of 3 x having RMS threads. Magnification of 15 x and 30 x are obtainable with the combination of optics provided. Focussing is by rack and pinion motion. Counting of the yarn is conveniently done on a full scale graticule covering 55 mm cloth length.

The demand of the instrument is at present being met through imports. This instrument will be required by textile testing labs. and several other research institutes working on the development of textiles.

The Chandigarh Institute has designed, developed and fabricated a prototype and the same has been found working satisfactory.

All the plant and machinery needed for the fabrication of the unit are available indigenously. It will be uneconomical to take up this process independently. However, any firm having a mechanical workshop fitted with the normal facilities of metal sheet/works, drilling, turning, milling and surface finishing operation and optical workshop for the production of optical components like lenses and mirrors can go in for this process.

COAL FOR USE IN MANUFACTURE OF LEAD-ACID BATTERIES LOCATED

For a leading Indo-American firm, who are starting a new manufacturing concern for the production of lead-acid battery and its major components (hard rubber containers), the Central Fuel Research Institute (CFRI), Dhanbad, has located an indigenous coal source to meet the specifications of anthracite which is used by the firm's collaborators in U.S.A. On scanning various coal resources for their quality, CFRI found that the coal from the Daltonganj coalfield of the National Coal Development Corporation was suitable.

A detailed study was made on the suitability, and consistency of the quality of the coal. A 100 kg. representative sample was provided to the firm for tests to be conducted by their principals in U.S.A. The sample has been found acceptable to the firm. Nearly 1500 tonnes of such coal will be used by the firm every year in place of anthracitic coal which would have to be imported otherwise.

SPOTLIGHT ON IDNIA'S PHARMACEUTICAL INDUSTRY

Product development and diversification, continuous research in tune with international trends and conversion of indigenous material for modern end-uses are the three major characteristics that mark the development of India's drugs and pharmaceutical industry in recent years. In the last two decades or so, progress in the production pattern of basic drugs and pharmaceuticals has been considerable. But the ever rising domestic demand for life saving drugs has made it imperative to depend on their import trade. Even so, the aspect of import substitution assumes growing importance in the context of developing the industry.

Comprising a number of organised firms and small-scale units, the drugs and pharmaceutical industry in India has attained a stage of self-sufficiency in many a prominent sector of anti-biotics, anti-diabetics, analgesics, vitamins, anaesthetics and sulpha drugs. There are over 100 factories in the organised large scale private sector and about 2,000 units in the small scale sector. Besides, large public sector units have also been active in the manufacture of drugs and pharmaceuticals. The total output of the industry is estimated at nearly Rs. 3,500 million per year. The industry may be regarded in terms of three sectors, namely, indigenous, foreign and small-scale, roughly in the ratio of 40 per cent, 40 and 20 per cent in terms of output value. Government of India allows foreign collaboration in this industry, particularly in respect of newer varieties of drugs. At the same time, the Government attaches importance to indigenous research and production.

As in 1972, the installed capacity and actual production was as follows : antibiotics 740 tonnes and 453 tonnes, anti-tubercular products 1100 tonnes and 560 tonnes; Oral anti-diabetics 68 tonnes and 71.4 tonnes; insulin 1500 M.U. and 632 M.U., analgesics and antipyretics 1836 tonnes and 1238 tonnes, anaesthetics 603 tonnes and 226 tonnes; anti-malarials (synthetic) 61.6 tonnes and 79 tonnes; anti-dysentery drugs 152 tonnes and 100 tonnes, hormones 3150 kgs and 1845 kgs; vitamins 496 tonnes and 363 tonnes; sulpha drugs and intermediates 1500 tonnes and 1485 tonnes. Notwithstanding the substantial progress in indigenous production in drugs and pharmaceuticals, the import value of drugs was Rs. 230 million in 1972-73.

However, the industry has proved its merit, as it is able to supply a wide variety of drugs to different markets. The export value of pharmaceutical products looked up in recent years. It was worth Rs. 124 million during the first eleven months of 1973-74 as compared to Rs. 84.6 million in the same period of 1972-73. The major export has been in respect of medicaments which fetched Rs. 84 million in the period under review during 1973-74. Of the medicines, prominent categories are Ayurvedic and Unani medicines. Besides medicaments, the export trade comprised vitamis, antibiotics, streptomycine, alkalods, hormones, adhesive tapes and plaster of Paris. These have also proved popular in world markets.

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In view of the ever increasing domestic demand and the need for substituting imports with indigenous products, the Indian Government have plans to manufacture life saving drugs in the public sector.

While formulating proposals for the future expansion of the industry, stress is being laid on the aspect of international technological consultancy and cooperation in the field of research. Newer products with improved therapeutic efficiency are being discovered from time to time to facilitate this process. Foreign technical collaboration is being welcomed in areas of sophisticated technology and available domestic technology and managerial expertise are being re-organised. Further, the pattern of produc- tion is receiving a shift from the earlier tradition of manufacturing, based on imported intermediates to the production from the basic stage. In fact, those manufacturers who are being allowed to go in for foreign collaboration are expected to pay increasing attention to the basic manufacture of bulk drugs rather than resort to manufacture based on imported material. ☐

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TRACTORS IN EXPORT TRADE

In tune with gradual improvement in India's export trade in agricultural implements and machinery including tractors, one of the manufacturers in the line, M/s. International Tractor Go. of India Ltd. (Gateway Building, Apollo Bunder, Bombay) have to date secured export orders for tractors and implements worth over Rs. 30 million. U.K., Australia, Turkey, Japan, Indonesia, Kenya, Tanzania, Muscat and Nepal are among major customers for the company's products.

The export effort of the Bombay firm is not limited to only physical exports. They have also concluded a collaboration agreement with Zambia for manufacture of agricultural implements in that country, it is learnt. Under the agreement, the firm is to supply complete technical knowhow and components needed for the assembly plant. They are also likely to negotiate another collaboration contract for setting up a tractor assembly plant in Zambia.

Set up in 1963, the company started production of tractors at Kandivli near Bombay in 1966. It has so far turned out 50,000 tractors, establishing itself as the first Indian company to have achieved this production figure. Creditably, the tractors manufactured by the firm are 95 per cent indigenous.

Recently, the firm has received a letter of intent for production of an additional 10,000 tractors. With this, the annual licensed capacity of the firm is expected to have risen to about 20,000 tractors. Currently, they are manufacturing two models, International 434–a 44 H. P. Tractor and International B-275, a 33 H. P. tractor. However, with the recent expansion of their licensed capacity, they plan to have two more models-one of 52 HP and the other of 68 HP.

In addition to tractors, the firm also manufactures a number of agricultural implements including cultivators' ploughs and harrows at its Nagpur plant.

India's export trade in agricultural implements and machinery was up at Rs. 6 million during 1972-73 as compared to Rs. 3.6 million in the preceding year. This uptrend was more prominent in 1973-74. During the first eleven months of the year (April '73–Feb. 74) such exports fetched Rs. 9 million as against Rs. 5.35 million in the same period of the previous year. The principal product lines exported during the period related to tractors and machinery for harvesting, threshing and sorting purposes and a variety of machinery parts. These overseas supplies fetched Rs. 4.86 million. Tanzania, Nigeria, Nepal and U.K. were the major export destinations for these products. Appliances for preparing and cultivating soil constituted the next best variety of export dynamism having earned Rs. 2.88 million from foreign markets including Sri Lanka, Zambia, U. K., Nigeria, Nepal, Iran and Kenya. The exports of other agricultural machinery and parts were valued at Rs. 1.34 million with Nepal, Singapore and Yemen Arab Republic as the major destinations.

Listed in the private sector, the agricultural tractor industry in India has a licensed/registered capacity of the order of 147,000 tractors per year. Installed capacity is around 60,000 numbers. Actual production was of the order of 18,300 numbers in 1972.

INDIAN DIESEL ENGINES TO U.K.

Indian industry has already built up a growing market for diesel engines in U.K. and other West European countries in the face of stiff international competition. M/s. Kirloskar Oil Engines Ltd, Poona has recently succeeded in securing orders from U. K. for about 3,000 diesel engines valued at nearly Rs. 6 million.

The firm's efforts to make a headway in the Australian market are also likely to prove fruitful. In fact, they have already bagged an order valued at Rs. 2 million for supply of engines to that country.

In addition to the orders from U.K. and Australia, the Poona firm has received yet another order worth Rs. 3 million from Thailand. They are also negotiating for supply of 500 engines to Lebanon. The company proposes to send five engines to the buyers in that country as samples. Besides, they are likely to get a contract for supply of 100 engines valued at Rs. 0.50 million from Iran.

The engines manufactured by the Poona firm find their way to a number of countries. Of these, Saudi Arabia, Iran, Libya, ARE, Dubai, Syria and Lebanon are together importing as many as 10,000 engines a year. The company is hopeful of stepping up this figure to 15,000 numbers a year.

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M/s. Kirloskars are one of the well established manufacturers of oil engines in India. Their production profile, today, covers a variety of oil engines, ancillaries and parts. Broadly, the manufacturing range includes diesel engines ranging from 3 to 440 BHP for industrial, marine and agricultural purposes. The company also manufactures thin walled metal bearings and bushes for stationary and automotive type of diesel engines.

Included in the priority sector, India's diesel engine industry has 27 units in its infrastructure. Of these, one is in the public sector and the rest are in the private sector. The licensed capacity is of the order of 265,000 numbers while the installed capacity is placed at 192,000 numbers. In the orgainsed sector, the production during 1972 was estimated at 70,000 numbers. The industrial policy in the line encourages open licensing. However, foreign collaboration is considered on merits. Excepting a few components, most of the raw materials are available indigenously. To its credit the industry has achieved almost cent per cent import substitution in the manufacture of vertical engines below 15 HP and horizontal engines below 50 HP. Of the total production, about 90 per cent is in the small HP range (below 15 HP).

CHEMICAL PRODUCTS IN EXPORT TRADE

India is today exporting a wide range of chemicals and chemical products to a number of devloped and developing countries. From Rs. 354.58 million in 1971-72, the country's overseas trade in chemicals improved to Rs. 403.63 million in the year that followed

The export value of the group during the first three quarters of 1973-74 was Rs. 333 million compared to Rs. 295.80 million in the corresponding period of 1972-73. The foreign exchange earning of major divisions in the group during the two comparable periods was : chemical elements and compounds Rs. 74 million and Rs. 62.50 million; dyeing, tanning and colouring materials Rs. 68.20 million and Rs. 73.40 million; medicinal and pharmaceutical products Rs. 91.80 million and Rs. 69 million; essential oils, perfume materials, toilet, polishing and cleansing preparations Rs. 73.15 million and Rs. 74.20 million; explosives aud pyrotechnic products Rs. 2.80 million and Rs. 2.50 million and plastic materials, regenerated cellulose and artificial resins Rs. 8.22 million and 5.69 million.

M/s. Cellulose Products of India Ltd. (P. O. Kathwada, District (Ahmedabad) supplied sodium carboxy methyl cellulose, (CMC) Monochloroacetic acid (MCA) and agar-agar worth about Rs. 0.30 million to overseas markets during 1973-74.

Set up in 1969, the Ahmedabad firm is engaged in the manufacture of chemical products, particularly, CMC of technical and purified grades, cellulose pulp from cotton linters and monochloroacetic acid (MCA) and sodium Monochloroacetate (SMCA). The company's CMC plant is put up in collaboration with a Swedish firm. It is consisting mainly of three units, namely, a continuous mercerisation machine, a shreder and a continuous dryer. The capacity of its CMC plant is rated at 8 tonnes of technical CMC per day and 1 tonne of purified CMC per day. The company has established and subsequently expanded a plant to manufacture MCA/SMCA which is the raw material for CMC, by complete indigenous knowhow. The expanded capacity of MCA/SMCA plant is 1800/2166 tonnes per year which is sufficient not only to meet its own requirements for production of CMC, but leave surplus to meet the demand from indigenous consumers.

The company has also a plant at Ramol (Distt. Ahmedabad) to manufacture straw board and grey board at the rate of 10 tonnes a day. It is also producing sodium alginate from sea weeds by its own research work and knowhow at Kathwada factory. Recently, it has also started a plant at the Kathwada factory for manufacture of polyvinly alcohol (PVA).

EXPORT PERFORMANCE AND POTENTIAL

NEW TRADE AGREEMENT BETWEEN INDIA AND SOUTH KOREA

A trade agreement between India and South Korea has been signed recently at Seoul, the capital of South Korea. The trade agreement contains 10 articles which envisages maximisation of trade tnrnover between both the countries through appropriate measures. The agreement also stipulates promotion of technical cooperation for the economic development and improvement of living standards, exchange of technical knowhow and personnel.

The new agreement supersedes the trade pact effected by an exchange of notes 10 years ago. Under the old agreement, the trade turnover between both the countries could not be expanded and on the other hand remained at a low level.

The new trade agreement would be effective for the period of two years initially but would continue from year to year, unless either party notifies the other of its intention to terminate it. The review of the working of the agreement would be made by both the parties at least once a year.

The total trade turnover between these two countries during 1972-73 totalled Rs. 82.47 million as against Rs. 79 million in the preceding year. In the turnover in 1972-73, India's share of exports to South Korea totalled Rs. 12.60 million while its imports from that country amounted to Rs. 69.90 million. During 1971-72, India exported worth Rs. 63 million to South Korea and its imports from that country amounted to over Rs. 16 million.

In the first eleven months of 1973-74 (April 1973-February 1974), India's exports to South Korea were of the order of Rs. 59.70 million while its imports during the first ten months of 1973-74 (April '73-January '74) from South Korea amounted to Rs. 1.75 million.

Apart from the above trade agreement, a cultural agreement was also signed between both the countries. The agreement provides for greater cooperation in the fields of art, culture, education, public health, mass-media, sports and journalism. This pact will be in operation for a period of five years unless either of the parties terminates it.

READYMADE GARMENTS FARE WELL ABROAD

Though of recent origin, the readymade garment industry in India has succeeded in achieving a steady increase in its exports over the last few years. The export earning was merely Rs. 59.26 million in 1968-69. It increased to Rs. 90 million in 1969-70, Rs. 125.30 million in 1970-71 and Rs. 178 48 million in 1971-72. In 1972-73, there was a further improvement in the export value at Rs. 355.59 million which reached a peak level of Rs. 542.60 million in 1973-74.

Garments made from cotton constituted the leading export variety in 1973-74. These fetched Rs. 495.70 million in foreign exchange. Readymade garments of silk was yet another important category of export dynamism with an earning valued at Rs. 11.53 million, followed by woollen garments at Rs. 4.69 million and those from man-made fibres at Rs. 3.36 million. The earning of other varieties of garments totalled Rs. 27.36 million.

Interestingly, a sophisticated country like U.S.A. topped the list of buyers for India–manufactured readymade garments during 1973-74. Its purchases during the year were estimated at about Rs. 97.50 million. U.S.S.R., with an intake worth Rs. 60.86 million was the next best destination, followed by U.K. at Rs. 50.34 million, Sweden at Rs. 43.55 million, Australia Rs. 42.56 million, Denmark Rs. 38.56 million, Federal Republic of Germany Rs. 30.54 million and France Rs. 31.12 million. Italy, Netherlands, Norway and Canada were the other major export destinations in order of the value of their intake.

Creditably, the industry in India has been able to hold its own in the export field despite keen competition from countries like Hong Kong, Taiwan, China, and South Korea. The future prospects for the industry seem to be bright as due to shortage of labour and high wages, most of the developed countries are closing down their domestic production of readymade garments in preference to imports from abroad.

The Government of India has also taken a number of measures to step up the exports. For instance, in addition to import replenishments for dyes and embellishments, cash assistance is provided by the Indian Cotton Mills Federation against garment exports. Further, garment exporters can participate in Garment Fairs arranged by the Cotton Textiles Export Promotion Council, Bombay at concessional rates. Exporters in the line whose exports exceed Rs. 0.5 million are entitled to become recognised export Houses. Yet another step taken in this direction relates to import of garment machinery on the basis of 60 per cent export obligation. Another measure taken in this context provides for import of synthetics of any type and selective import of cotton cloth for export production of garments against firm export orders. Proposals for foreign collaboration for developing garment exports on the basis of a specific rate of royalty on exports are normally considered favourably. This enables the Indian manufacturers to up date and diversify the production in keeping with the latest fashions and designs.

Alongwith improving export trunover, the number of units in the export trade has also increased. In 1968, there were hardly 50 exporters of readymade garments in the country. Today, the number has increased to 1200. Of these, about 500 are manufacturer-exporters while the rest are only merchant exporters. In fact, almost all the large garment units are engaged in export production. The manufacturing capacity of the manufacturer-exporters registered with the Textiles Export Promotion Council, Bombay is estimated at about 13 million pieces a year (300 working days), valued at Rs. 350 million to Rs. 400 million in one shift working. Quite a few of these units are working double shifts.

The garment industry in India is more or less a cottage industry. As such, no precise statistics of its capacity and production are available. It is, however, variously estimated that over Rs. 1,000 million worth of fabric is being used by the industry while the total production, both for the home and export markets, is estimated at about Rs. 1200 million to Rs. 1500 million. There were about 2000 units in the line at the end of 1972.

EXPORTS OF DRUGS AND PHARMACEUTICALS UP

The rising export graph of Indian medicinal and pharmaceutical products in recent years clearly indicates the popularity enjoyed by these items abroad. From only Rs. 40 million in 1968-69, the exports improved to Rs. 59.75 million in 1969-70, Rs. 84.65 million in 1970-71, Rs. 96 million in 1971-72 and Rs. 103 million in 1972-73.

The year 1973-74 has witnessed the exports scale a new high. During the first eleven months of 1973-74 (April '73–February'74), the exports brought in as much as Rs. 124.40 million registering a sizeable increase over the export value in the corresponding period of the preceding year at Rs. 84.60 million.

During the period under review of 1973-74, as in the preceding years, medicaments constituted the leading category of export dynamism having earned as much as Rs. 84 million. As compared to the export value of medicaments during the full year of 1972-73 at Rs. 70.45 million, the increase during April '73 February 1974 was of the order of 20 per cent. During 1971-72, the exports were valued at Rs. 59.60 million only. A wide variety of medicines and drugs, such as, Ayurvedic and unani medicines, homeopathtic medicines anti-diabetic drugs (other than insulin), gripe water, hydrochloric acid, medicinal contraceptive foam tablets, headache nuralgia pain remedies, sulphadiazine, ointments for cough, cold and bronchital infections, proprietory patent medicines, blood purification tonics, drugs and medicines containing spirit and many other medicaments were supplied to a large number of countries during the period. U.S.S.R. Nepal, Sri Lanka, Rumania, Austria, Federal Republic of Germany, Belgium, Saudi Arabia, Tanzania Republic, Hungary, Indonesia, Switzerland, Sudan and U. K. were the principal importing destinations,

Opium alkaloids and other vegetable alkaloids, salts and derivatives, the next important category active in exports during the period fetched more foreign exchange. Their export value improved to Rs. 14.82 million from the exports in the full year of 1972-73 at Rs. 12.25 million and Rs. 11.85 million in 1971-72. In this category, a variety of alkaloids, derivatives and salts were supplied to U.S.A., Japan, Federal Republic of Germany, Bulgaria, Hungary, Netherlands and Korea Republic.

One more category which earned sizeable foreign exchange during the period pertained to antibiotics. The exports in the line were valued at Rs. 12 85 million as against Rs. 10.70 million in the complete year of 1972-73. USSR, USA, Hong Kong, Bangladesh, Libya, Sri Lanka, Tanzania Republic, Federal Republic of Germany, Philippines, Saudi Arabia, Switzerland and Korea Republic were the principal importing countries.

Pharmaceutical goods also improved their offtake to Rs. 11.75 million during April-73 February 1974 from the full preceding year's level of Rs. 7.50 million. The export range included adhesive bandages and tapes, kaolin poultice, medicated lint, plaster of Paris, other bandages, dental cement and other dental fillings and sterile surgical catguts which were supplied mainly to Poland, Bangladesh, Thailand, U.K., Zambia, Italy and Kenya.

Apart from these principal categories, vitamins and provitamins and harmones were also supplied abroad.

TYRES AND TUBES FETCH MORE FOREIGN EXCHANGE

From Rs. 57.40 million in 1972-73 India's export trade, in tyres and tubes improved to Rs. 64.60 million in the eleven months of 1973-74 (April 73–February 74), indicating sizeable export prospects in the line during the year.

Of the total export realisation during April 73-February 1974, tyres of all types earned as much as Rs. 56 million which accounted for more than 88 percent of the total export value while the share of tubes of all types was of the order of Rs. 9 million.

Amongst the varieties of tyres that appeared in exports during the period under review, tyres for trucks and buses was the principal variety which secured Rs. 31.82 million, more than 50 percent of the total export value of tyres (Rs. 56 million). Yugoslavia topped the list of the buyers abroad having purchased worth Rs. 12.92 million. Czechoslovakia with an intake to the tune of Rs. 8.76 million conslituted the second important market, followed by Iraq at Rs. 3.40 million, U. K. at Rs. 1.45 million, Sudan at over Rs. 1 million, Korea Democratic Republic Rs. 1.60 million and Kuwait Rs. 1.20 million. Among other buyers, Singapore, Korea Republic, Arab Republic of Egypt and Saudi Arabia were significant.

Cycle tyres, the next important variety active in exports during the period netted Rs. 5.26 million. About 40 countries imported cycle tyres from India amongst which Bangladesh (Rs. 1.68 million), U.S.A. (Rs. 1.05 million), Afghanistan (Rs. 0.46 million), Ghana (Rs. 0.47 million), Rumania (Rs. 0.25 million), Peru (Rs. 0.36 million) and Iraq (Rs. 0.25 million) were significant.

Tyres for off-the-road vehicles earned Rs. 8.65 million. More than a dozen countries bought these during the period under review. Amongst these, Yugoslavia at Rs. 3.45 million, Czechoslovakia at Rs. 2.45 million, Korea Democratic Republic at Rs. 0.80 million and Indonesia at Rs. 0.72 million were significant.

Besides these varieties of tyres, the export value of other tyres was : motor car tyres Rs. 2.67 million, tractor tyres Rs. 0.68 million, tyres for other vehicles Rs. 6.30 million and tyre flaps Rs. 0.90 million.

In the category of tubes, trucks and buses tubes earned Rs. 3.53 million. Czechoslovakia was the bulk importer which bought worth Rs. 3.43 million alone. Cycle tubes which secured Rs. 2.54 million were bought by about 30 markets, in which U. S. A., Dahomy Republic, Rumania, Bangladesh, Afghanistan, Malaysia and Peru were the significant destinations.

Apart from these main categories, tubes for motor cars earned Rs. 0.55 million, tubes for off the road vehicles Rs. 0.57 million, tractor tubes Rs. 0.13 million, tubes for other vehicles Rs. 0.90 million and tyre flaps Rs. 1.27 million. Motor cycles tubes were also exported at a negligible value.

INDIA TO ASSIST NEPAL IN POWER GENERATION

Nepal is to seek Indian assistance for the construction of the Devighat Hydro-Electric Project in that country for the generation of 15 MW of power.

The talks about the terms of assistance for the project were recently concluded between the Indian and Nepalese authorities. The proposed project is estimated to cost Rs. 110 million.

As agreed to, India is to provide Nepal with funds, technical experts and material for the construction of the project. The power generation by the proposed projects through utilisation of water resources of Trishuli River, will be solely for internal consumption only. The final agreement in this connection is expected to be finalised shortly.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

RURAL ELECTRIFICATION IN INDIA

The programme of rural electrification assumes special significance especially in an agro-based economy. India, one of such economies, which has about 80 per cent of its population dependent on agriculture, lays special emphasis on rural electrification. It is the most basic need for transformation of rural life and agricultural production. Apart from this, it also plays a key role in the development of rural industries.

Efforts on planned basis were made to accelerate the pace of rural electrification in India through the preceding four Five Year Plans. Starting from 1952, when there were only 3600 electrified villages in the whole country, the programme of electrification of villages was undertaken as a part of planned development. The efforts carried on since then yielded desired results and by the end of 1973 (December), the number of electrified villages reached as high as 148,000, covering 26.20 per cent of the total villages in India.

It would be worthwhile to assess the progress achieved in this field in recent years. At the end of the Third Five Year Plan, i.e. March, 1969, there were only 73,722 electrified villages while the number of pumpsets energised totalled 1.09 million. By the end of 1969-70, the number of electrified villages improved to 81,825 numbers while that of energised pumpsets reached 1.35 million numbers. The number of electrified villages and energised pumps further improved sizeably in the subsequent years also. For example, during 1970-71, the respective figures in both the fields were 104,938 numbers and 1.63 million numbers; in 1971-72 at 122,094 numbers and 1.90 million numbers; in 1972-73 at 139,695 numbers and 2.19 million numbers and during April-December 1973, the figures further improved to 148,261 numbers and 2.35 million numbers.

During the Fourth Plan, the target for energisation of pumpsets was placed at 1.25 million numbers at an outlay of Rs. 4446.50 million. However, the target in respect of electrification of villages was not specified as the plan was primarily oriented towards energisation of irrigation pumpsets/tubewells.

The actual achievement during the Fourth Plan in both the fields i.e. electrification of villages and energisation of pumpsets was of the order of 74,539 numbers and 1.26 million numbers respectively. (Upto December 1973).

It is estimated that by the end of the Fourth Plan about 150,000 villages would have been electrified and 2.44 million pumpsets energised.

The Rural Electrification Corporation, set up in the central sector, is implementing various schemes in the line which envisage electrification of 52,548 villages, energisation of 0.56 million pumpsets and power supply to 88,940 small scale and agro-industries.

The progress in rural electrification in the Eastern States is comparatively slow as compared to the other parts in India.

During the Fifth Plan, the tempo of rural electrification will be maintained. It is proposed that in the Fifth Plan at least 30-40 percent of the rural population in every state should have the benefit of electricity by the end of the Plan. This will be possible under the 'Minimum Needs Programme' for which an allocation of Rs. 2720 million has been made for extension of electricity in the backward areas and backward States. The total allocation for the programme of rural electrification in the Fifth Plan is Rs. 10,980 million and the target is to electrify 101,000 additional villages and energisation of 1.58 million pumps.

SOPHISTICATED UNDERGROUND CABLES TO BE MANUFACTURED

The first of its kind to be manufactured in India, the Communications artery–the sophisticated types of underground cables, are to be shortly rolled out of the Hindustan Cables Factory, Hyderabad, Andhra Pradesh. The Hyderabad Company is the first in India to undertake manufacture of such sophisticated underground cables.

The annual capacity of the firm is placed at 5000 standard kms of underground telephone cables. The unit is expected to be expanded to have an additional production of 3000 standard kms of these cables per annum. The firm is to manufacture this variety of cable in technical collaboration of a well known British firm, M/s. Standard Telephones and cables limited. All other jobs pertaining to planning, execution of the project, installation and commissiong of the plant have been completed by Indian personnel only.

India imports these improved types of cables in sizeable quantities every year. Indigenous manufacture of these cables by M/s. Hindustan Cables Limited is expected to reduce the imports to the tune of about Rs. 77.20 million per annum, it is reported.

Indian cable industry manufactures a variety of cables and wires. The production range of the industry covers ACC/ACSR conductors, (production in 1973 at 58,000 tonnes), enamelled winding wires (15,000 tonnes) paper covered winding wires (5200 tonnes), PILC and PVC power cables (15,000 kilometres), PVC/VIR power cables (620 MCM), dry core cables (3000 kilometres), coaxial cables (800 kilometres), aluminium wire rods (51,000 tonnes) and bare copper conductors (1000 tonnes).

INDIAN OIL REFINERIES—SOME FACTS

The present capacity of the Barauni Refinery of 3 million tonnes has been stepped up in view of availability of Rustom crude which India is getting as its share of the off-shore operations in the Persian Gulf. In addition to this, the availability of additional one million tonnes of crude from the Assam State is expected to save sizeable foreign exchange to the tune of Rs. 700 million by cutting down imports to this extent.

Among other refineries, the existing refining capacity of 4.3 million tonnes of the Gujarat Refinery is to be expanded to 7.3 million tonnes per annum. The refinery, after expansion, would process imported crude mainly from West Asia in addition to the indigenous crude eminating from the Gujarat oil fields. For this, some additional facilities will have to be created while the existing ones would be revamped to make them suitable for processing high sulphur imported crude. M/s. Engineers India Limited is to undertake the responsibility in regard to design, engineering and construction. The project is expected to be completed by the middle of 1977.

The six-million tonne Mathura Refinery is expected to produce all the major fuel products and supply heavy feed-stock to two-fertiliser projects. The refinery was designed to permit an increase in its capacity to 7 million tonnes per annum. With the expansion in the capacity to this extent, the refinery would be in a position to supply heavy feed-stock for four fertiliser plants. The process know-how for this plant would be obtained from abroad but two indigenous firms namely, M/s. Engineers India Limited and M/s. Bharat Heavy Electricals Limited (BHEL) are to be associated with the project. BHEL, particularly, has been entrusted with the responsibily of building the entire thermal power station. The project is expected to be completed by 1978.

INCREASED PRODUCTION BY BEL

The State owned enterprise Bharat Electronics Limited (BEL), Bangalore, has increased its production turnover by 11.5 percent during 1973-74 over that of the preceding year. The production of the Company improved from Rs. 390 million in 1972-73 to Rs. 451 million in 1973-74. BEL has its factories at Bangalore (Karnataka) and at Ghaziabad (Uttar Pradesh).

There was also an appreciable increase in the Company's exports which rose from Rs. 10 million in the previous year to Rs. 18.60 million in 1973-74. In addition, the Company also finalised a big export order with a Swiss firm for Rs. 170 million worth of sophisticated electronic equipment.

The Ghaziabad Unit of the Company has made a good start. The production of the Factory attained a level of Rs. 20 million during the year under review. Besides securing the Indian Oil Company's (IOC) order for the Communication system for their Haldia-Barauni-Kanpur Pipeline, the Ghaziabad unit has been entrusted with a project to provide modern and reliable Microwave Communication Network for the Police department in Tamilnadu. The Project will cost Rs. 10 million.

Development effort of BEL are in progress. Presently, it is engaged in developing a variety of sophisticated equipment, such as, indigenous design and development of a very wide range of Communication, TV and Broadcast equipment for the Defence, Police department, Post and Telegraphs and All India Radio. Apart from this, Mobile Radars, Secondary Surveillance Radars and Microwave Communication equipment, visual display system, peripherals for computers, etc. are in various stages of progress.

BEL has already spent a sum of Rs. 21.71 million on various development projects. This included Rs. 3.7 million of capital expenditure.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

GERMANIUM FROM FLY-ASH

The National Metallurgical Laboratory (NML), Jamshedpur, claims that germanium which is a vital material used in modern communication equipment and defence hardwares can be extracted by means of a magnet from flyash, a waste product from thermal plants.

A systematic investigation of thermal plants in the country by NML scientists has shown that flyash and flue gases are the potential sources of germanium. In particular, it has been found that fly-ash and flue dusts obtained from the thermal power station of the Gujarat State Electricity Board, Porbunder were rich in germanium. This station is using coal from Newton Chickely, North Chandamatta, and Chandamatta collieries. Extraction of this material (germanium) from fly-ash is done in most parts of the world. At present, India is importing germanium.

The NML scientists say that fly-ash from Porbunder station contains more germanium than found in other countries.

ELECTRICAL RELAY TESTER

The Electrical Relay Tester is a portable apparatus designed essentially for testing and calibration of various types of A.C. electrical relays such as over current relay, no volt or low volt relay, relays for remote control circuits incorporated on switch gears, starters, gate–end boxes and drill panels etc., used in mines and other industries. It will be useful for maintenance and testing in workshop and industry. Voltmeters and ammeters can also be tested and calibrated with the help of this device.

A need was felt to have a device for quick and efficient testing and calibration of various types of electrical relays such as over current relays, voltage relays for preventive maintenance and repairing purposes incorporated in a single compact portable unit. With the above in view, investigations were carried out at the Central Mining Research Station, Dhanbad and a prototype of electrical relay tester has been successfully assembled at the laboratory.

The electrical relay tester comprises a regulator which is an auto transformer 0 to 260 volts, 4 amperes, the out-cut of which is connected to the primary of a current transformer designed as a current amplifier from 4 to 100 amperes through one way of a two way double throw selector switch and to the primary of a step up voltage transformer 230/550 volts through the other way of selector. The secondary of the current transformer is brought out to the current output terminals with an indicating ammeter 0 to 100 amperes connected in series and the secondary of the step up transformer is brought out to the voltage output terminals with an indicated voltmeter 0 to 600 volts connected across. The regulator regulates the primary circuits of the current transformer and supplies desired amplified current from the secondary to current relay under test.

The electrical relay tester fulfills all the requirements desired of such an instrument. The working range of the device is 0-100 amperes for over current relays and 0-550 volts for voltage relays. This range can be modified by replacement of certain components. The performance of the device has been checked in the laboratory on electrical relays. The inverse time current characteristics of an overload relay has been established using different dash pot oils.

Main switch, main indicative lamp, regulator, 4 amps, 0-260 volt, selector switch, fuse for voltage circuit, short circulating link, current transformer, ammeter, voltmeter and step up transfosmers are the components required for the fabrication of the electrical relay tester. All these can be obtained indigenously. The project involves more or less assembly of electrical components and as such reasonable working space with normal workshop facilities will be sufficient. No major equipment is involved in the fabrication of the device.

DECUTICLING AND DEGERMING MACHINE FOR GROUNDNUT KERNELS

Groundnut oil cake is rich in protein (about 45 per cent). Because of its dark colour due to the presence of red skins or cuticles and bitter taste because of saponins present in the hearts (germs) of groundnut, the cake despite high protein value is not considered fit for human consumption and is mainly used as cattle feed. In order that the groundnut oil cake would be a good protein supplement in food products, the O.T.R.I., Anantapur has developed decuticling and degerming machine of two separate designs covered by separate Patents, which enable getting a cream coloured cake and without the bitter taste. This cake can be converted into flour meant for food processing industries such as protein fortified wheat flour, protein rich bread, biscuits and confectionary.

The process under one of the Patents (No. 119586) comprises in passing the size-graded and roasted groundnut kernels between two vertically mounted discs made of wood or hard rubber or similar material facing each other, one of which is stationary and the other mechanically rotating at a r.p.m. in the range of 500-1440 and thus subjecting the seed to rubbing action due to which the skins are peelded off from the kernels and the kernels split into their constituent halves which facilitates the knocking off the hearts or germs, partly or wholly and separating the constituents of the mixture (decuticled and degermed kernels, skins, hearts and any powdery material) from one another by means of sieving in a shaker separator with pneumatic aspiration.

Separation of the constitutents of the mixture may also be carried out by making the mixture issuing from the decuticler fall on an inclined plane at the base of which is working a fan. While decuticled splits and some free germs slide down the plane and fall to ground, light cuticles and fine powder, if any, will be blown away by the fan.

The process under the other patent (No. 120405) consists of feeding the size-graded and roasted groundnut kernels to an assembly of machines essentially comprising a roller type beater, a trough-like grate formed of perforated sheet or flats or round bars with spacings between each and a fan blower. The kernels as soon as they fall into the trough are rubbed by the revolving beater against the grate and are instantly decuticled and incidentally split into two natural halves from which the germs are knocked off during the operation. The decuticled and degermed split, germs and cuticles are immediately forced down through the openings in the grate on to an inclined plane (placed directly below the grate) whence the light materials like cuticles, fine powder, if any, are blown away by a fan to fall behind the machine while the decuticled and degermed kernels and some germs come down by gravity from the inclined plane and are collected in front of the machine.

These machines can be easily fabricated in India and no imported components are involved. Any conventional vegetable oil mills and solvent extraction plants can instal the decuticling and degerming machine. Prototypes made on both the above patents can be demonstrated. The germs and red skins can be mixed and crushed for oil or can be mixed with commercial groundnuts and crushed. The laboratory expects that the oil cake obtained after decuticling and degerming can be sold for 40 per cent higher price than the conventional cattle feed cake.

INDO-MALAYSIAN TRADE RELATIONS

Malaysia with an area of about 334,000 square kilometres and a population of about 11 million is an agricultural country and one of the world's major producer of rubber, tin, palm oil and timber. Her exports which were of the order of $ 825 million in 1958 have shown a steady rise to reach $ 1854 million in 1972. Her imports similarly improved from $ 740 million in 1958 to $ 1726 million in 1972. Thus both imports and exports have more than doubled in the last fourteen years. The trend in her foreign trade has continued in 1973 and 1974. The figures available for the first half of 1973 indicate that her exports have gone up by about 50 per cent and imports by about 30 per cent over the level attained in the first half of 1972.

Being neighbours, India and Malaysia have close economic and commercial ties. India's exports to Malaysia which stood at Rs. 85 million in 1960-61 rose to Rs. 93 million in 1972-73. However, imports declined from Rs. 200 million in 1960-61 to 75 million in 1972-73. The balance of trade was adverse to India right up to 1969-70 but since then Indian exports to Malaysia have been in excess of imports from there. The composition of India's exports has also undergone a complete change during the last decade. While in 1960-61 cotton manufactures accounting for 38 per cent was the most prominent item, the pride of place is now occupied by machinery and transport equipment which accounted for Rs. 37 million (39 per cent) out of the total export of Rs. 93 million in 1972-73. Cotton manufactures exported during 1972-73 were valued only Rs. 15 million, about 50 per cent of the level in 1960-61. Export of vegetables, mainly onions, increased from Rs. 5 million in 1960-61 to Rs. 8 million in 1972-73. Metals and metal products increased from Rs. 1.3 million in 1960-61 to Rs. 9 million in 1972-73. Precious stones and glass and glasswere, two new items which were introduced after 1960-61, fetched Rs. 3.4 million and Rs. 2.7 million respectively in 1972-73. Chemicals, exports of which were less than a million rupees in 1960-61, earned Rs. 3.5 million in 1972-73.

It would be noticed that the Indian exports to Malaysia have been considerably diversified and a number of new non-traditional items from India, such as, precious stones, metal products, machinery and transport equipment, chemicals, glass and glassware have been introduced in this market. The trend has further been strengthened in 1973-74 when Indian exports to Malaysia during the first eleven months amounted to Rs. 201 million, more than double of the level of Rs. 83.4 million attained in the corresponding period of 1972-73. Commoditywise breakup of the exports for this period is not yet available, However, on the basis of the information available for the first six months of the year, it appears that 25 per cent of the exports (Rs. 22 million) are accounted for by cotton manufactures and readymade garments. Machiney, both electrical and non-electrical, made up 36 per cent of exports (Rs. 32.5 million). The allied items, in transport equipment, earned 3.5 per cent (Rs. 3 million). Exports of metals and metal products constituted 8 per cent (Rs. 7 million) of the exports. Onion exports during the period were Rs. 5.4 million (6 per cent). Paper and castor oil, two new items, earned during this period Rs. 1 million and Rs. 1.4 million respectively. The value of precious stones exported in the half year was Rs. 1.1 million. Thus the total exports of Indian products to Malaysia during the first half of 1973-74 amounted to Rs. 87.5 million against only Rs. 38.6 million during the corresponding period of 1972-73.

Indian imports from Malaysia have likewise increased to more than double of the level attained in 1972-73, actual figures for 1973-74 (first half) and 1972-73 (first half) being Rs. 84.6 million and Rs. 35.1 million respectively. The major items of imports during 1973-74 were tin (Rs. 50.6 million) and palm oil (Rs. 31.6 million).

India is also cooperating with Malaysia to develop her industries. Twelve industrial units have already been set up in Malaysia with Indian collaboration. The items being manufactured in these units include steel furniture, precision tool gauges, confectionery, cotton textiles, enamelled wires, electric motors, pumps, diesel engines, industrial chains, automobile chains, pharmaceuticals and glass bottles, apart from a steel foundry unit and a unit for processing palm oil. ☐

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INSULATORS ON EXPORT STREAM

Emergence of electrical industry in the post-Independence period and the rapid progress achieved in the later decades has enabled India to join the select group of nations that are in the forefront in this line of manufacture.

Among a number of firms in the line, a West Bengal firm, M/s. Jayshree Insulators, have recently received an order for supply of high tension insulators, from Philippines. Valued at Rs. 8 million, the order is stated to be India's biggest ever export contract for this product. It has been won on the basis of competitive quality, even in preference to samples from developed countries like the U.S.A.

Earlier, the firm secured another order worth Rs. 1 million for this product from Thailand. Set up in 1967, the firm has been able to get a foothold in a number of foreign markets like U.K., Philippines, Thailand, Singapore and Malaysia.

The firm enjoys a high reputation for its stringent quality control in the home market. Its annual production, currently rated at 2800 tonnes, is expected to attain a level of 60,000 tonnes in the near future.

The total export earnings of India-made electrical insulating equipment was Rs. 2.40 million in the first eleven months of 1973-74. Items exported in the group included porcelain insulated above 11 Kv to 66 Kv to Sri Lanka, Dubi, Indonesia, Malaysia and Mauritius; porcelain solid core insulators to Burma; telegraph and telephone insulators of porcelain to Burma, Sri Lanka, Singapore and U.K.; Insulators other than porcelain to Bahrein Islands, Dubai, Japan, Libya, Nigeria and Thailand. Besides these products, electrical insulating fittings (other than porcelain) and electrical conduit fittings also contributed to the export trade. Of these, fittings were mainly exported to Singopore Kuwait and Ghana, while Sri Lanka, Dubai, Libya and Saudi Arabia were among the major buying countries for conduit tubings.

RAILWAY WAGONS FOR BANGLADESH

Adding to the number of sizeable orders secured by India in recent years for supply of railway vehicles to Asian countries and other markets, the Projects and Equipment Corporation (PEC) of India, a subsidiary of the State Trading Corporation of India, has recently concluded a deal for supply of as many as 500 broad gauge 4-wheeler covered wagons to Bangladesh.

The order is valued at Rs. 33 million and the supplies are to commence within 15 months of coming into force of the contract, to be completed within six months.

In addition to this, PEC's offer to supply 50 broad gauge third class coaches to Bangladesh Railways has also been accepted. A contract in this context is likely to be signed shortly. Deliveries in fulfilment of this agreement will commence within 4 months of the coming into force of the contract and will be completed in 3 months thereafter.

India's exports of railway vehicles during the first eleven months of 1973-74 (April '73-February '74) totalled about Rs. 56.25 million as against Rs. 36 million in the corresponding period of the preceding year. Of the total export earning in the eleven months of 1973-74, railway wagons, vans and trucks alone accounted for about as much as Rs. 37.75 million. The export value of railway and tramway passenger cars (not mechanically propelled) was Rs. 1.15 million. Passenger cars were exported to Zambia while Yugoslavia, Poland, Iran and Iraq were the importing countries for wagons and trucks. Total overseas supplies of railway vehicles were valued at Rs. 39.62 million in the full year of 1972-73. Besides physical exports, India is also assisting a number of African and Asian countries in building railway systems.

Currently, there are 16 units producing wagons in the country–two in public sector and 14 in the private sector. Their installed capacity is 33869 numbers in terms of 4 wheelers. Of these units, at present, seven are lying closed while one is concentrating on export production only. The Government of India have recently taken over the management of 4 closed units. The production of wagons which was of the order of 6543 numbers in 1971-72 improved to 9170 numbers in the following year. For the full year of 1973, it is estimated at 11,000 numbers.

The manufacture of railway wagons is now fully established and the units in the line are producing various types of wagons, such as, open type, closed type, 4 wheelers and 8 wheelers. At present, no foreign collaboration is allowed in the industry.

Of the raw materials used in the manufacture of railways wagons, steel sections, wheel sets, axle boxes with the roller bearings, coil springs, leaf springs, air brake equipment, steel castings are available indigenously. Certain steel sections are, however procured, through import.

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INDIAN HANDTOOLS TO WORLD MARKETS

Indian handtool industry has been enjoying growing reputation as a competent supplier of a wide range of handtools and small tools to world markets. The export value of these tools which was nearly Rs. 0.63 million in 1960-61, rose to Rs 49 million in 1970-71 to improve further to about Rs. 68 million in 1971-72 and Rs. 74.50 million in 1972-73. The performance in 1973-74 would be more encouraging, as actual exports during the first eleven months of the year (April '73-February '74) were valued at Rs. 82.63 million.

Though spanners, files, rasps and wrenches were the major items of handtools exported during the first eleven months of 1973-74, cutting tools including taps, reamers, tool bits and carbide tips also contributed to the foreign exchange earning. Taps, for instance, were supplied to 9 countries, including sophisticated markets like U.K. and Canada at a value of Rs. 1.17 million. Export of reamers, though limited, were directed to an advanced country like U.S.A.

In tune with this trend, M/s. Indian Tool Manufacturers Ltd. (101 Sion Road, Sion, Bombay) claim to have stepped up their exports of cutting tools like hoist drills, reamers, cutters and taps from year to year. Their export earning for the year 1973-74 amounted to nearly as much as Rs. 2.90 million. But for certain constraints, the performance of the firm would have been still better. Their export destinations include even West European countries and U.S.A.

India's total production of handtools and smalltools in the organised sector was of the order of Rs. 400.86 million in 1971 as against Rs. 363.20 million in 1970. In 1972, the production of some of these tools was : twist drill Rs. 43.65 million, reamers Rs. 6.83 million, milling cutters Rs. 23.10 million, tungsten carbide tips Rs. 21.80 million, lathe tools (tool bits) Rs. 14.30 million, tungsten carbide tipped tools Rs. 11.87 million and forged hand tools Rs. 81.93 million.

MARINE PRODUCTS AND MEAT POPULAR ABROAD

Indian marine products and frozen meat are enjoying growing popularity in markets abroad. The export value of marine products increased by more than 50 percent to Rs. 747.65 million in the first eleven months of 1973-74 (April 73-February 74) compared to about Rs. 489.30 million in the corresponding period of the preceding year. During the two comparable periods, meat (fresh, chilled or frozen) earned Rs. 56.90 million and Rs. 31.60 million in foreign exchange.

In tune with this trend, M/s. Allansons Private Ltd. (Allana Building, 424, Maulana Azad Road, Bombay) dealing in frozen meat and marine products, fresh fruits and vegetables, crushed bones and spices, succeeded in stepping up their exports to as much as Rs. 21 million during the first quarter of the current year (April-June 74), surpassing their own export performance at Rs. 20 million for the entire preceding year (1973-74).

Recently, the company supplied Alphonso mangoes to Gulf countries. Interestingly, it chartered four flights for the purpose, ensuring that the consignment reaches the destination fresh.

Though set up only in 1973 to look after the interests of the Allana group of companies, M/s. Allansons claim to have their origin way back in 1865 under the parent company of Jossabhoy Allana & sons. The Company has a modern cold storage and freezing plant, occupying 20,000 sq. meters plot in New Bombay with 4000 tonnes cold storage capacity and plate and tunnel freezing capacity of 25 tonnes per day.

The company has now embarked on diversification of their export activities in the field of chemicals, minerals, engineering goods, readymade garments and handicrafts.

EXPORT PERFORMANCE AND POTENTIAL

PEPPER EXPORTS TO USA

While total exports of spices from India aggregated to Rs. 524.70 million (57,149 tonnes) during 1973-74 and Rs. 290.5 million (45,290 tonnes) in 1972-73, exports of pepper amounted to Rs. 289.30 million (30,718 tonnes) and Rs. 143.10 million (19,958 tonnes) in the respective years.

Export trade in pepper in 1973-74 surpassed all the previous records in terms of both quantity and value. Its increased production in India, reduced supply from other producing countries, high unit price realisation, substantial purchases by the USA and the consistent demand from USSR and other East European countries are among the major factors that facilitated the export improvement.

USA has been an important buyer of Indian spices. Its import of spices is subject to inspection by the Food & Drug Administration (FDA) of the U.S. Government. Exporters in India take maximum care in preparing the consignment for export by cleaning and fumigation and each consignment is subject to strict pre-shipment inspection and quality control by the Government of India's 'Agmark' authorities. Of late, as a result of the regulations of the FDA in USA, certain consignments used to be detained at the American ports on the ground that it contained a piece of rodent hair or a live insect.

While all exports of spices from India are effected after they are well cleaned and free of all refractions, it is beyond the control of the consigner if a consignment gets infested in transit as it takes about 2 to 3 months for a consignment to reach American ports. Indian exporters insisted that liability for payment of cleaning charges be limited to 2 cents per lb in the event of detention of pepper in any U.S. Port by FDA of USA. Eventually during April-June, 1974, USA did not buy pepper from India. Only exports worth Rs. 22.43 million were effected during these three months against contracts concluded earlier. U.S.A. has now started buying pepper on the condition stipulated by Indian exporters.

UPTREND IN FOREIGN DEMAND FOR LEATHER FOOTWEAR

Overseas demand for Indian leather footwear and components has shown an uptrend in 1973-74. The export value for leather footwear in the year is estimated to have gone up to Rs. 100 million in comparison to Rs. 97.80 million in 1972-73, and Rs. 85.80 million in 1971-72. The same trend was noticeable in regard to leather components. Their foreign exchange earning picked up at Rs. 114.80 million (1973-74) as against Rs. 107.10 million in 1972-73 and Rs. 90.80 million in the preceding year.

Quantumwise, nearly 5.72 million pairs of leather footwear were supplied abroad in 1973-74 as against 7.50 million pairs in the year that preceded. Obviously, this reflects and increased unit value realisation in exports.

Of late, the Govt. of India has taken a number of steps to promote leather footwear exports. Thus the export of semi processed leather has been regulated through a quota system so that additional quantities of leather should be available for manufacture of leather footwear. Further a comprehensive list of machinery required for production of finished leather and leather footwear has been drawn up import of which will be allowed both against import replenishment licenses as well as capital goods licenses. The Government has also expanded the shopping list for import of chemicals and dyes in the new import policy for registered exporters. Additionally, the existing air freight subsidy scheme on export of leather footwear has been extended till the end of the next month. Further extension of the scheme is also likely to be considered in due course.

In addition to the various steps enumerated above, the State Trading Corporation of India which is the canalising agency for export of all leather footwear from India is formulating a scheme for assisting the leather industry, including footwear, for export purposes. It is also proposed to remove excise duty of 10 percent levied on footwear manufacturer in the

Small Scale Sector as this is acting as a constraint on such exports.

In view of these incentives for export promotian of leather footwear, the tentative target for these exports has been fixed at Rs. 200 million for 1974-75.

Besides leather footwear, India is also supplying abroad footwear made from canvas and rubber. The overseas supply of canvas and rubber footwear fetched Rs. 31.40 million and Rs. 30 30 million in foreign exchange in 1971-72 and 1972-73, respectively. For the first ten months of 1973-74 (April '73 - Jan. '74), the export value was Rs. 20 million.

FOREIGN EXCHANGE FROM HANDICRAFTS

Excluding gem and jewellery, India's export trade in handicrafts amounted to Rs. 603 million (provisional) during 1973-74. Woollen carpets, rugs and druggets including namdas contributed Rs. 253.27 million, art metalware Rs. 105.90 million, woodware Rs. 57.10 million, handprinted textiles and scarves Rs. 49.36 million, imitation jewellary Rs. 22.81 million, embroidered goods Rs. 23.71 million, carpets, rugs and durries of cotton Rs. 14.23 million, Zari Rs. 10.35 million, shawls as artware Rs. 2.81 million. ivory products Rs. 2.74 million and miscellaneous handicrafts Rs. 78.74 million.

Comprising a wide range of crafts, Indian handicraft items are estimated to have a production value of Rs. 4000 million during 1973-74. By 1978-79, the production level is anticipated to go up to about Rs. 6000 million.

Handicraft exports from India have been revealing a consistent uptrend year after year. While the provisional export value during 1973-74 was Rs. 603 million as mentioned above, it was of the order of Rs. 518 million in 1972-73 and Rs. 382.40 million in 1971-72. All these figures exclude the export value of gem and jewellery.

The major markets of Indian handicrafts are mainly the developed countries. Most important importers are the USA, Belgium, Hong Kong, German Federal Republic U.K. and Japan. Federal Republic of Germany, is the foremost buyer of Indian carpets while USA occupies the leading position for practically all other items. Other important countries where Indian handicrafts are exported are Switzerland, Netherlands, Canada and Singapore.

The foreign exchange earned by the gem and jewellery export trade during 1972-73 was Rs. 767 million and Rs. 1085.60 million (estimated) during 1973-74.

SUGAR IN INDIA'S EXPORT TRADE

India's export trade of sugar amounted to 140,000 tonnes in 1974 so far, outside preferential quota. A further quantity of about 300,000 tonnes is to be supplied by December 1974 (outside preferential quota) under contracts finalised so far.

The State Trading Corporation of India has so far exported 226,000 tonnes of both, raw and white sugar during 1974. Of this, 140,000 tonnes of white sugar valued at Rs. 526.6 million has been exported to non-preferential areas. Among the importers are Indonesia, Iran, South Yemen People's Republic, Sudan, Sri Lanka and Maldive Islands.

India is one of the world's major producers of cane sugar. Its production of sugar during 1973-74 was of the order of 4 million tonnes as compared to 3.87 million tonnes in 1972-73 and 3.10 million tonnes in 1971-72.

Indian exports of sugar amounted to 99,000 tonnes in 1972 and 195,000 tonnes in 1973. In view of the imperative need to maximise the country's foreign exchange earnings to meet the heavy import bill of crude in the prevailing oil crisis, the Government of India considered it necessary to earn as much as possible from export of sugar. High world prices of sugar also proved favourable in 1974.

Sugar is not canalised for export through the State Trading Corporation. Under the Sugar Export Promotion Act, 1958, the Ministry of Agriculture specified the Indian Sugar Industry Export Corporation Ltd. Delhi as an export agency, effective from January 1, 1970.

EXPORT POSITION OF IRON ORE

Iron ore, which is the largest foreign exchange earner among minerals exported from India, secured an export value of as much as Rs. 1450 million (24.4 million tonnes) during 1973-74. In the preceding year, the value was Rs. 1127 million (21.4 million tonnes). The share of Minerals and Metals Trading Corporation (MMTC) in the export trade was to the tune of Rs. 910 million (12.6 million tonnes) during 1973-74 and Rs. 694 million (10.6 million tonnes) in 1972-73. In these two years, shippers from Goa exported worth Rs. 540 million (11.8 million tonnes) and Rs. 433 million (10.8 million tonnes) respectively.

Total production of iron ore in India was 35.20 million tonnes in 1972. Of this, Goan production was 11.37 million tonnes. Indigenous steel industry's annual requirements of iron ore are around 16.5 million tonnes. The country, therefore, has sufficient surplus of the ore to export.

Japan is the foremost buyer of Indian iron ore accounting for about 80 per cent of its exports. Other important importers, in order of importance, are Czechoslovakia, Rumania, Poland, Belgium and Hungary. MMTC has been successful in securing sales for about 1.6 million tonnes of various grades of iron ore for shipment to West European countries during the period September 1973 to May 1975.

During 1972-73, Japanese intake of India's iron ore was of the order of 17.59 million tonnes valued at Rs. 917.20 million. In the first ten month of 1973-74 (April 1973 to January 1974), Japanese imports amounted to 14.68 million tonnes (Rs. 824.80 million).

In India, commercial exploitation of iron ore is confined mainly to hematite ores. Iron ore deposits are located almost in every state in the country. The richer deposits, however, exist in Bihar, Orissa, Madhya Pradesh, Goa, Maharashtra and Mysore.

In the years 1970-71 and 1971-72, India earned an extra foreign exchange valued at Rs. 20.90 million and Rs. 18 50 million respectively from export of pellets. There is a plant in Goa (M/s. Chowgule & Co., Pvt. Ltd.) which has been producing pellets since 1967. It has a production capacity of 550,000 tonnes annually.

TEXTILE PACT WITH USA

A new Agreement relating to trade in cotton textiles has been recently signed between India and USA. It is valid for a period of 4 years, commencing from October 1973.

Under the Agreement, the quota of textiles for the first year (October 1973-September 1974) would be 152 million sq. yards (119 million sq. yards for yarn and fabrics and 33 million sq. yards for made-ups and garments). In regard to certain categories within these groups, specific limits are applicable. For the subsequent years of the agreement, the quota level would be increased by 7 per cent of the preceding year's level.

Handloom fabrics, hand-made cottage industry products of handloom and other–items (traditional Indian Cottage Industry products) would not, however, be subject to the above quota restrictions.

India and USA concluded the Cotton Textiles Agreement in September 1970 and this was valid for four years beginning from October 1970. This Agreement was concluded under umbrella of the Long Term Arrangement regarding international trade in Cotton Textiles (LTA). The LTA which was to expire by the end of September 1973 was extended upto the end of 1973. A new Multifibre Arrangement was concluded in December, 1973 covering man-made fibre also in addition to cotton textiles. Handloom fabrics of cottage industry and handmade cottage industry products of such fabrics are, however, outside its purview. The new arrangement provides for a growth rate of 6 per cent n quotas and approves of bilateral arrangements within its framework between textile exporting and mporting countries.

Indian exports of cotton textiles totalled Rs. 1583.40 million in 1972-73 against Rs. 1151.43 million in 1971-72.

An estimated Rs. 375 million worth of cotton textiles were supplied to USA in 1973-74 as compared to Rs. 203 million in the preceding year. The intake of UK was of the value of Rs. 498 million and Rs. 243 million in the respective years. USSR, purchased worth Rs. 376 million and Rs. 225 million. Other major buyers have been German Federal Republic, Australia, Sweden, France, Japan, Singapore, Canada, Netherlands, Bangladesh, Sudan, Malaysia, Nepal, Denmark, Italy and New Zealand.

BRIGHT EXPORT PROSPECTS FOR NEW SCENTED PADDY

A new variety of scented paddy recently evolved and raised on an experimental basis on a five acre plot by the Rice Research Station at Aduthurai in Tanjavur District has brightened the prospects of boosting exports of rice sizeably. The crop of the scented paddy was very much satisfactory, it is learnt.

The new strain, a cross breed of P.C. 1163 and 'Ratna' known as Pusa-33 is a short duration crop-105 days and is capable of adapting itself to both 'Karuvai' and 'Navarai' seasons. The developed paddy is quite superior than the conventional varieties of scented paddy grown in the country and has a sizeable export market abroad.

The Rice Research Station proposes to introduce Pusa-33 on a large scale in Cauvery delta next year. The yield per acre from the variety has been estimated at 2 tonnes.

India is already exporting superior varieties of rice to a number of countries abroad. The Basmati variety particularly, is a much sought after variety overseas. The demand for the variety is growing at a fast rate especially from the Gulf countries.

During 1972-73, India's total exports of rice amounted to Rs. 37.70 million while during the eleven months of 1973-74 (April 73-February 74), the exports secured nearly Rs. 29 million.

During (April 73-February 74), rice (excluding parboiled varieties) was purchased by about 18 countries abroad of which Bahrein Islands constituted the largest buyer having imported 2300 tonnes at Rs. 7.75 million. Qatar was the next best destination having imported 1000 tonnes at Rs. 4.45 million, followed by UK. and Dubai at Rs. 4 million each, Kuwait Rs. 3 million, Singapore Rs. 1.64 million and Mauritius Rs. 1.25 million. In terms of quantity, 8156 tonnes were supplied abroad during the period.

In 1972-73, Saudi Arabia constituted the principal buyer of Basmati rice which bought alone worth Rs. 12 million (6830 tonnes). Dubai imported worth Rs. 6.40 million (2000 tonnes), followed by Muscat at Rs. 2.60 million, Bahrein Islands at Rs. 2.4 million and kuwait Rs. 1 million while the export to Gulf countries totalled Rs. 23.50 million and to other countries Rs. 14.20 million.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

HIGH POWER ELECTRON BEAM COMMISSIONED

A high power electron beam melting unit has been developed by M/s. Bhabha Atomic Research Centre (BARC), Bombay, recently. The unit has been commissioned at the Special Materials Plant of the Nuclear Fuel complex in Hyderabad, Andhra Pradesh.

The unit developed by the Plasma Physics section of the BARC has a capacity of 60 kilowatts. At present, it has been commissioned at a power level of 15 kilowatts which will be boosted ultimately to 30 kilowatts and 60 kilowatts in two phases.

The unit has done about 300 hours mainly for melting tantalum on continuous basis, it is stated. Tantalum is one of the most difficult metals to melt because of its high melting point of 3000° C and its easy susceptability to contamination. The melting rate of tantalium in this furnace is about one kg. per hour, it is learnt.

In the unit, a high energy focussed electron beam is impinged onto the item to be melted. As a consequence, energy from the electron is transferred to the work-piece which results in its melting.

As the whole process takes place in a high vaccum of 10 mm, the melted metal is of a very high quality. The melting is carried out in water-cooled copper crucible which minimises contamination crucible itself and at the same time assures easy removal of the melted material from the container.

The unit consists of four electron guns (each apable of delivering one amp), a high voltage 15 kv. power source, a water cooled job handling chamber with leadglass viewing slots and a water-cooled copper crucibles.

Although the capital cost of this unit is higher than that of an arc or induction melting unit of similar capacity, it is stated to be indispensable where the quality of molten metal is the main consideration.

The use of a high power electron beam unit for melting would be a big advantage to industries engaged in the production of refractive and re-active materials like tantalum, niobium and zirconium. The BARC has also developed a number of small electron beam furnaces for melting and welding applications at a power level of 6 kilowatts.

BOILER INDUSTRY
A SPOTLIGHT

Manufacture of boilers has assumed prime significance in the heavy electrical sector in India because of their growing requirement in the process of rapid industrialization in the country. Boiler manufacturing technology in India, in fact, has come to a stage of undertaking manufacture of a variety of boilers catering to different industrial uses. Today, this sector is in a position to satisfy the growing home demand for a variety of boilers as well as to spare for overseas supply. The export of boilers, in fact, has become a routine feature of the heavy electrical industry.

Presently, India is manufacturing various types of boilers, such as, thermal power station boilers, vertical boilers, water boilers, package type boilers, economic type boilers and waste heat boilers. So far, thermal station boilers up to 410 M.W. capacity were being manufactured indigenously but the range has been now widened upto 200 mw capacity.

There are in all 13 units engaged in the manufacture of boilers of various types in the organised sector. Alongside boilers, the units also undertake manufacture of boiler mountings and fittings. M/s. Bharat Heavy Electricals Limited (BHEL), Tiruchirapalli is a principal boiler manufacturing unit in the public sector in India which has to its credit manufacture and exports of a variety of boilers in different ranges. The unit besides meeting the bulk of home demand, exported a number of boilers to various countries, particularly to the codeveloping economies like Malaysia. Apart from these, some of the units in the private sector are manufacturing and exporting industrial boilers overseas. (Industrial and power boiler industries have been classified as key industries.

The production of the boiler industry is constantly growing from year to year. In the organised sector, the production during 1973 was estimated at Rs. 700 million as compared to Rs. 571.50 million in the preceding year and Rs. 409.20 million in 1971. The installed capacity in the industry also went up from 1150+1.3 MKW in 1971 to 1650+1.3 MKW in 1972. The boiler manufacturing units in India are located in the States of Maharashtra, West Bengal, Tamil Nadu, Gujarat, Punjab and Haryana.

Among the raw materials that are required for the production of boilers, M.S. plates, B.Q. plates of certain sizes, carbon steel, seamless steel tubes of specific sizes and electrodes are available indigenously but M.S. plates, B.Q. plates, carbon steel, seamless tubes of certain sizes, alloy and steel and stainless steel tubes and specialized electrodes are partially required to be procured from abroad.

From Rs. 0.54 million in 1969-70, the industry's exports of boilers reached Rs. 6.60 million in 1972-73. The exports during the first three quarters of 1973-74. (April-December 1974), in fact, reached an all time high at Rs. 25.28 million. Of these, Steam generating boilers and parts netted as much as Rs. 20.80 million while central heating boilers and parts secured Rs. 4.50 million.

Malaysia is the biggest buyer of India manufactured boilers and parts. During the period under review of 1973-74, its purchases of steam generating boilers and parts totalled as much as Rs. 19.67 million while those of central heating boilers and parts were of the order of Rs. 2.52 million. Besides Malaysia, Japan, Singapore and Australia were the other buyers during the period.

Indian boiler industry has mastered the technical expertise to manufacture boilers to suit the growing needs of a developing economy. The ranges of boilers manufactured in Indias are most suitable to satisfy the rapidly growing requirements of co-developing countries in the world.

INDIAN AGRICULTURE LOOKS UP

India's requirement of foodgrains is growing rapidly every year in view of the rapid growth of its population. Despite this fact, the progress it has achieved in the production of foodgrains so far is satisfactory. The country is striving hard further to meet the bulk of home demand in this field. Way back in 1955-56, the foodgrain production was only 66.9 million tonnes. By 1970-71, within 15 years, it touched the record level of 108.4 million tonnes, recording an increase of 62 per cent. During the same period, the area under grain crops increased by only 12 4 per cent, from 110.6 million hectares to 124.3 million hectares.

Unforeseen weather vagaries, however, brought down the production to 95.2 million tonnes in 1972-73. The country faced unprecedented drought for two consecutives years in 1971 and 1972. The drought in 1972—worst in the last five decades - affected 230 districts out of 340 districts involving a population of about 200 millions.

Even the production of 95.2 million tonnes—the lowest during the Fourth Plan—was the highest in any year prior to the Fourth Plan.

A variety of factors contributed to the increase in agricultural production. Thanks to the scientific and technological advance ushered in by the scientists in India and abroad, Indian agriculture has recorded steady increase in productivity. The Indian farmer also showed remarkable response to the new technological innovations in agriculture. He has exploded the centuries-old myth that the Indian farmer was not responsive to the technological advances.

Farmers are now clamouring for more and more fertilisers. There has been a spurt in the demand for high-yielding varieties of seeds. The number of tubewells has risen manifold and so is the number of of tractors in use.

In 1950-51, the fertiliser consumption was hardly 100,000 tonnes. The fertiliser consumption has touched a new high - 3.2 million tonnes in 1973-74, an increase of 3200 per cent—and the demand is ever increasing.

In the last two decades, an additional area of 11.7 million hectares was covered by major irrigation projects. The number of tubewells has risen from 93,000 in 1966 to 820,000 in 1973-74 and that of electric pumpsets from 0.5 million numbers to 2.4 million numbers. The number of tractors in 1960-61 was only 31,000. Today their number has increased to nearly 200,000.

Under the new strategy for agricultural development introduced after the drought of 1966-67, the area under high-yielding varieties has also increased steadily. Total estimated area under high-yielding varieties of grains in 1971-72 was 17.94 million hectares –an increase of more than 900 per cent over 1966-67. It further increased to 25 million hectares by the end of Fourth Plan in 1973-74.

The small and marginal farmers hold 62 per cent of the total operational holdings of less than 2 hectares. With modern technology, it is now possible to convert even small farms into economically viable units by use of inputs and fertilisers and by taking to other related occupations.

The Indian Government took several measures to enable the small and marginal farmers to take advantage of the latest technology and thus increase their production. Under the Fourth Plan, 46 Small Farmers Development Agency projects and 41 Marginal Farmers and Agricultural Labourers projects were set up in the country. Over 1.2 million farmers have been benefitted under the programmes of improved agricultural practices and 730,000 under other programmes like minor irrigation and animal husbandry.

The Small Farmers and Marginal Farmers Agencies which are now being combined into one to be known as 'Small Farmers' Development Agency' are being extended to cover 156 districts in the Fifth Plan. These agencies will implement crop husbandry programme which will include intensive agriculture, multiple cropping, introduction of high - yielding varieties, minor irrigation, land shaping, soil conservation, land development with special emphasis on dry farming practices and water harvesting measures. Each project will attempt to cover 50,000 beneficiaries.

Other programmes like the Drough-Prone Area Programme, Command Area Development and Tribal Area Development are also assisting the weaker sections in the rural areas to better their lot.

With the research throwing up new possibilities for increasing the agricultural production, the changing outlook of the farmer and the determination of the country to march ahead, the future of Indian agriculture appears brighter.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

SODIUM HYDROSULPHITE FROM INDIGENOUS MATERIALS

Sodium hydrosulphite is a powerful reducing agent used in textile printing and for bleaching of sugar, soaps, oils and straw. This chemical is already being produced in India and some quantity is being imported. The process being used by the indigenous manufacturers is based on consumption of zinc dust or mercury, both of which are imported. The highlight of the new process developed by the National Chemical Laboratory (NCL), Poona, is that it eliminates the use of both zinc dust and mercury and is based on sodium formate which is available indigenously.

The process consists of passing sulphur dioxide into aqueous methanolic soda and the sodium bisulphite so formed, reacts with sodium formate and sulphur dioxide whereby the hydrosulphite separates out as anhydrous crystals. Methanol and sodium formate present in the mother liquor are recovered and reused. Sodium hydrosulphite produced by this process conforms to Indian Standard Institution specifications. Its purity ranges between 85 and 90 per cent.

The process can usefully be taken up by parties already manufacturing the chemical by using zinc or mercury. The process has been tried at laboratory scale and the product has also been tested. All the raw materials used in the manufacture of sodium hydrosulphite, namely, sodium formate, caustic soda, sulphur dioxide and methanol are indigenously available. The equipment required for this process is the same as used in the chemical process industry.

The National Research Development Corporation of India, 61, Ring Road, Lajpat Nagar III, New Delhi-24 is reported to offer technical know-how for this newly developed process.

METHOD TO REDUCE INSECTICIDES USAGE

A method to save insecticides as well as labour and to reduce pesticidal pollution has been claimed by entomologists of the Punjab Agricultural University in India. Called 'water-less spraying', the method involves sprinkling of 'neat' insecticides in considerably reduced quantities in the form of ultra fine particles. During a field experiment, inventors of this technique claimed that a notorious pest of okra called cotton 'jassid' was effectively controlled at normal cost. The PAU scientists achieved this success by spraying as little as 20 ml. of insecticides per acre with the help of a motorised knapsack sprayer, fitted with the restricter. According to the technique evolved, it is possible to eat the fruits even just after spray. In other methods, farmers are usually advised not to harvest the crops till at least 10 to 15 days after spray. Under this revolutionary technique of spraying emulcifiable concentrates without diluting them with water, one acre can be covered in just four minutes.

ELECTRONIC TIMERS

Process industries in India can now switch over highly reliable, accurate and durable electronic timers designed and maufactured by M/s. Larsen & Toubro Limited. These electronic timers are suitable for regulating time delays in all automatic processes which involve pre-determined sequence of operations. The manufacture of these timers is fully backed by the vast research and development facilities of the firm. These timers have been fully tested for reliability, precision and long life under Indian conditions.

These electronic timers are suitable for switching circuits requiring operating delays of up to 120 seconds. The timers have two change-over contacts which switch after the set delay. The time delay is continuously adjustable by means of a graduated dial scale and an easily adjustable knob. Being enclosed in a moulded housing, the timer is not only protected against environmental condition but also eliminates the need for maintenance. It has a mechanical life of over ten million switchings.

PROGRESS OF ALUMINIUM INDUSTRY IN INDIA

The aluminium industry in India has come of age. As at the beginning of 1973, the total licensed capacity was of the order of 249,870 tonnes and installed capacity was 196,670 tonnes. Actual production of the primary metal was 155,486 tonnes. In 1972, the output was 179,103 tonnes.

Four units, namely, M/s. Indian Aluminium Company (INDALCO), Aluminium Corporation of India (ALCOP), Hindustan Aluminium Corporation Ltd. (HINDALCO) and Madras Aluminium Company (MALCO) are the main manufacturers of aluminium ingots, while two projects of Bharat Aluminium Company (public sector unit) at Korba and Ratnagiri are yet to commence production.

INDALCO which received an industrial licence in 1972 to expand its Balgaum Smelter capacity from 40,000 tonnes to 60,000 tonnes per annum has plans to further expand the smelter to 100,000 tonnes capacity per year. Besides this smelter, INDALCO has projects at Hirakud and Alupuram and its total installed capacity as at the beginning of 1973 was 76,176 tonnes. The company's utilisation of capacity was to the extent of 10 per cent in 1973. Alcop's utilisation was 57 per cent in 1973 and 87 per cent in 1972. Its installed capacity was 9000 tonnes as at the beginning of 1973. HINDALCO had an installed capacity of 95,000 tonnes by the same time and its actual output in 1973 was 63,920 tonnes. The company has plans to increase its capacity to 120,000 tonnes by the end of 1974-75. MALCO'S installed capacity was 16,500 tonnes by January 1973 and its output was over 9970 tonnes during 1973.

M/s. Bharat Aluminium Company (BALCO) in the public sector was established for the manufacture of aluminium ingots at Korba in the State of Madhya Pradesh and Ratnagiri in Maharashtra with capacities of 100,000 and 50,000 tonnes respectively. The Korba complex, which is based on the bauxite deposits in the Amarkantak and Phutkapahar areas in Madhya Pradesh and electric power from the Korba Thermal Power Station, is expected to produce 200,000 tonnes

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per year of alumina and 100,000 tonnes per annum of aluminium metal including about 60,000 tonnes per annum of aluminium semis (rolled and extruded products and wire rods). The project has the assistance of M/s. Chemol Complex of Hungary upto the alumina stage and of the USSR for the smelter and fabrication facilities. The first stream of the alumina plant was commissioned in April 1973. The smelter and fabrication facilities are expected to be commissioned in stages starting from the end of 1974 and ending by middle 1976. BALCO's second unit at Ratnagiri, with an initial capacity of 50,000 tonnes of aluminium per annum, is based on the utilisation of bauxite deposits located at Ugiri Dhangarwadi in Kolhapur district in Maharashtra and hydel power from the neighbouring Koyna Hydel Station. This project is expected to have a capacity to produce 50,000 tonnes of aluminium metal per annum including 25,000 tonnes of conductor grade wire rods. The first stage of the Ratnagiri unit with an installed capacity 25,000 tonnes is expected to go into production by 1976-77 and the second stage by 1977-78.

The country's aggregate capacity to produce aluminium, once the aforementioned expansion plans materialise in the next few years, is expected to be 430,170 tonnes as against the existing capacity (as on January 1, 1973) of 196,670 tonnes. About 53,500 tonnes are to be available from the expansion of three existing units viz INDALCO, HINDALCO and MALCO, 30,000 tonnes are to come forth from the Orissa project of ALCOP and 150,000 tonnes from the Korba and Ratnagiri projects of Bharat Aluminium Company.

World production of aluminimum metal was 11.54 million tonnes in 1973, with USA as the major producer accounting for 34 per cent of the total production. India's share is only 1.5 per cent.

Installed capacity for aluminium sheets and circles was 53,900 tonnes in 1973 in respect of three major manufacturers viz INDALCO, ALCOP and HINDALCO. Their actual production in the year was 50,869 tonnes. In addition, other manufacturers have an installed capacity of 5,880 tonnes and their output in the year was 2,750 tonnes. Thus the total production of the sheets and circles was 53,620 tonnes in 1973.

As regards aluminium foils and container sheets, the installed capacity was 7200 tonnes and output was 5930 tonnes (1973). M/s. India foils Ltd., INDALCO and ALCOP are the three manufacturers in the line in that order of importance.

India's total reserves of measured, indicated and inferred bauxite upto August 1973 were estimated at 317 million tonnes.

Indigenously available bauxite is converted into alumina for being processed into ingots. Installed capacity as on January, 1973 was 360,000 tonnes but actual production was 367,970 tonnes (1972).

Under the current import licensing policy (1974-75), imports of E C. Grade aluminium are allowed on restricted basis to 'actual users' (conductor manufacturers) and such imports are canalised through the Minerals and Metals Trading Corporation. Imports of aluminium circles, sheets, strips, wire rods, wires and foils of minimum purity of 99.7 per cent and above are also to be allowed to actual users on restricted basis. During 1972, aluminium ingots, were imported to the tune of 1810 tonnes (Rs. 8.4 million) as compared to 16,770 tonnes (Rs. 66.6 million) in 1971. During 1973, these imports were negligible. The import value of sheets, and circles was Rs. 8.7 million, while that of foils was about Rs. 2 million (1972).

As against the picture of imports, exports of aluminium sheet, and circles were effected to the tune of 16 tonnes during 1972 and 104 tonnes even during the five months of 1973 (January-May) Exports of aluminium foils were to the tune of 77 tonnes (Rs 0.7 million) during 1972 and 466 tonnes (Rs. 3.7 million) during January–May, 1973. □

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INDIAN DYESTUFFS POPULAR ABROAD

Till lately a significant importer of dyeing, tanning and colouring material, India has, to-day, emerged as an appreciable supplier of these products. The exports fetched Rs. 92.65 million in 1972-73 as compared to Rs. 54.50 million in 1971-72. During the first eleven months of 1973-74 (April '73–February '74), these overseas supplies totalled nearly Rs. 96 million against Rs. 87.87 million in the corresponding period of the preceding year.

Of the total export realisation of the group in the first eleven months of 1973-74, synthetic organic dyestuff, natural idigo and colour lakes alone secured Rs. 64.94 million in foreign exchange while pigments, paints, varnishes and related materials earned Rs. 29.78 million. The earning of dyeing and tanning extracts and synthetic tanning materials was, however, limited to Rs. 1.26 million.

In the group of synthetic organic dyestuff, natural indigo and colour lakes, direct sulphur dyes constituted the major item of export dynamism. It earned Rs. 18.98 million in foreign exchange during the period, followed by lake solvent dyes at Rs. 12.36 million and vat dyes at Rs. 12.24 million. The earning of other products in the group was : reactive dyes and azoic dyes Rs. 9.50 million, basic dyes Rs. 6.16 million; acid dyes Rs. 3.39 million and others synthetic organic dyestuff Rs. 2 million. U.S.A., U.K., Netherlands, Iran, U.S.S.R., Singapore, Switzerland and Kenya were among the important destinations.

In the group of pigments, paints, varnishes and related materials, prepared paints, synthetic enamels, varnishes and lacquers with foreign exchange earning of Rs. 25.70 million accounted for bulk of the earning of the group. USSR, and Netherlands were the leading buyers for the products.

Cutch extract and tanning extracts of vegetable origin were the specific groups of items that were prominent in the export trade of synthetic tanning materials and dyeing and tanning extracts in the first eleven months of 1973-74. France, Bangladesh, Australia and Hungary were the significant markets.

Contributing to the export effort in the line, M/s. Indian Dyestuff Industries (Mafatlal Centre, Nariman Point, Bombay) made record exports of Rs. 19.30 million in 1973-74 as against Rs. 16 million in 1972-73, Rs. 15 million in 1971-72, and Rs. 11.50 million in 1970-71. The export business of the firm is expected to be much more encouraging during the current financial year. Even during the first four months of the year, their overseas supplies stood at Rs. 16.60 million. Total sales for the period aggregated to Rs. 72 million against Rs. 52 million in the first four months of 1973-74. The export target for the entire current year is placed at Rs. 40 million. This is likely to be stepped up to Rs. 80 million in due course. Besides physical exports, the company is reported to have been approached by Arab Republic of Egypt for collaboration in putting up a plant in that country.

The firm is also reported to have received an industrial licence to manufacture 500 tonnes of pigments, mainly for the export market, in addition to a letter of intent for expanding the capacity of vat dyestuffs from 625 tonnes to 825 tonnes. Apart from this, they have applied for Government permission to undertake the manufacture of phthalic anhydride, an important raw material.

In the organised sector, there are currently 22 units engaged in the manufacture of dyestuffs and intermediates. The annual installed capacity is 18,950 tonnes while the licensed capacity is 20,850 tonnes. Actual production during 1973-74 was 15,100 tonnes which accounted for 80 per cent capacity utilisation. In the preceding year (1972-73), capacity utilisation was 78 per cent and the actual production was rated at 74,200 tonnes. The capacity and production by the terminal year of the Fifth Five Year Plan (1978-79) is targetted at 30,000 tonnes and 24,000 tonnes per annum.

The industry has developed competence in the manufacture of diverse materials, such as, azo dyes (acid direct and mordant), basic dyes, disperse dyes, naphthols, fast colour bases, optical whitening agents, organic pigment colours, reactive dyes, sulphur dyes and vat dyes. Recently, production of new intermediates like dimethylaniline has also commenced. The other ranges of production established during 1972 included toly peri acids, 1S0 violanthrone, leuco quinizarine and dimethylaniline.

CALCULATORS TO WORLD MARKETS

The export earning of India—made office machines and parts has registered consistent improvement in recent years. From Rs. 19.57 million in 1970-71 the export value of these products improved to Rs. 21.45 million in 1971-72 to attain a level of over Rs. 22 million in 1972-73. The export achievement of these machines scaled new heights in 1973-74. During the first eleven months of the year, (April 73 - February 74), the export earning was up at Rs. 37.20 million which surpassed the foreign exchange earning of the entire preceding year by over Rs. 15 million.

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During 1973-74 (upto February 1974), statistical machines, such as, punchers were the major export items in the line. Their sales alone in markets abroad fetched as much as Rs. 33 million. Total export value for punchers was Rs. 3.40 million and Japan bought the bulk at Rs. 2.60million. For other statistical machines Japan again topped the list of buyers with an intake valued at Rs. 21 million. Other important purchasers included Australia, Indonesia, New Zealand, Philippines and Singapore. Next to statistical machines, calculating machines (manually operated) were significant in the export trade in the group. These were supplied to Hungary, France, Sri Lanka, and U.S.A. at Rs. 0.72 million. Of this Hungary alone accounted for Rs. 0.70 million. Typewriters which constituted another area of export growth contributed nearly Rs. 0.76 million to the total export earning of the group. Bangladesh. which bought these at Rs. 0.41 million topped the list of buyers, followed by Sri Lanka, Ghana, Nepal, Singapore and U.S.S.R.

Duplicating machine weres supplied to 8 countries including Afghanistan, Burma, Sri Lanka, Nepal, Nigeria, Bangladesh, Tanzania and Thailand. The Export value totalled nearly Rs. 0.30 million. Thailand was the major purchaser.

Besides machines, office machine parts also netted Rs. 2.35 million in foreign exchange. France, Czechoslovakia and U. K. were the important purchasers.

In the context of these exports, M/s. Shourie Duplicators (P) Ltd. (2A, DLF Industrial Area, Najafgarh Road, New Delhi) have also made a modest contribution. As late as February, 1974, the firm exported calculating machines worth Rs. 4070 to Ghana. Their earlier performance in this field has however, been more appreciable. In May 1972, the firm supplied machines and accessories to Nigeria at a value of about Rs. 82,000. Such supplies made earlier (during 1969-70) to Arab Republic of Egypt fetched nearly Rs. 0.30 million in foreign exchange.

In their endeavour to popularise their products abroad, the firm has participated in a number of International Fairs abroad through official channel. Currently, they are one of the intending participants in the India Pavilion at the forthcoming Tehran Fair during September this year.

The production of duplicators in India was of the order of 5,296 numbers in 1973 against 4,229 numbers in 1972. The installed capacity was of the order of 10,10 numbers in both the years. The out-turn of calculating and addressing machines, both in 1973 and 1972, was of the order of 10,500 numbers against an installed capacity of 12,500 numbers. Similarly, production of addressing machines was around 850 numbers in both the years compared to an installed capacity of 870 numbers. Against an installed capacity of 86,400 numbers, actual production of typewriters was rated at 34,836 numbers and 41,971 numbers in 1973 and 1972, respectively. The installed capacity for typewriters is spread over 4 units. Import of typewriters is not allowed. Foreign collaboration is, however, permitted for portable and electric typewriters.

UPTREND IN EXPORT OF INDIAN WOOLLENS

The export value of wool and woollens in India has improved year after year. It increased to Rs. 480 million in 1972-73 from Rs. 358 million in 1971-72. Earlier, these exports were valued at Rs. 325.72 million in 1970-71 and Rs. 264.76 million in 1969-70. During the first three quarters of 1973-74 (April-December, 1973), these overseas supplies brought in Rs. 385 million, marking an improvement over the export earning of Rs. 364 million in the corresponding period of the preceding year.

Of the total foreign exchange earning during April-December 1973, carpets, druggets and namdas netted Rs. 180 million, woollen hosiery goods Rs. 140.80 million, raw wool Rs. 38.60 million, shawls and lohis Rs. 3.60 million, woollen readymade garments Rs. 5.40 million, woollen blankets Rs. 2.38 million, and woollen worsted and mixed fabrics Rs. 13.90 million. U.S.A., U.K., Federal Republic of

Germany, U.S.S.R., Czechoslovakia, Saudi Arabia, Netherlands, Canada and Australia are among the important markets for the these products.

In tune with this uptrend in overseas demand for these products, M/s. Shri Digvijaya woollen Mills, (Aerodrome Road, Jamnagar-3) almost doubled their exports to Rs. 4.28 million in 1973-74 from Rs. 2.37 million in 1972-73. This was possible as during the year, operations of 12 sulzer automatic looms and high pressure top dyeing and finishing machines enabled the company to improve the quality and range of its products.

Alongwith increase in the export earning, total sales of the Company during the year (1973-74) were also nearly 40 per cent up at Rs. 42.20 million as against Rs. 30.20 million in the preceding year. Their production range includes woollen and worsted yarn and fabrics like gaberdines, suitings, tropicals, velours, ladies over-coatings, tweeds, rugs and blankets, s and lohis.

Variety-wise output of the woollen industry during 1972 was : wooltops 12,491 Kgs, shoddy 3761 Kgs., Carpets 20,086 Kgs. and worsted 14,918 (wear 2653 Kgs; hosiery 2843 Kgs. and Knit 2422 Kgs.). As regards woollen fabrics, wearables accounted for 25,485 metres while the share of non-wearables was 3,335 Kgs. Total production of the hosiery sector was estimated at 2132 Kgs.

EXPORT PERFORMANCE AND POTENTIAL

PLASTICS AND LINOLEUMS EXPORTS UP

With foreign exchange earning of as much as Rs. 127 million in 1973-74, the Indian plastic and linoleum products have amply proved their qualitiative standard and price competitiveness in the overseas markets. Interestingly, the exports even outstripped the export target set for the year at Rs. 120 million, according to the Plastics and Linoleums Export Promotion Council, Bombay. As compared to the exports in the preceding year (1972-73) at Rs. 84.35 million, the export realisation in the year under review registered an improvement of about Rs. 42.65 million.

In the total export realisation during 1973-74, the Plastic group accounted for the bulk of foreign exchange earning at Rs. 108.40 million as compared to only Rs. 70 million in the preceding year (1972-73), while the share of linoleum products totalled Rs. 18.45 million and Rs. 14.30 million in the respective years.

A wide variety of plastic products indicated sizeable uptrend in 1973-74 as compared to their overseas offtake in 1972-73. Plastic imitation jewellery almost quadrupled its offtake to Rs. 19.20 million from its preceding year's level of Rs. 5.25 million. A similar trend was also noticed in respect of fountain pens, ball point pens and ball pens etc. Their exports rose to Rs. 8 million from only Rs. 2.33 million. Polyethylene film sheets and bags exports also more than doubled to Rs. 11 million from Rs. 5.20 million while plastic moulded and extruded goods improved their offtake to Rs. 16.15 million from Rs. 13.75 million. Among other items in this group, remarkable increase was noticed in respect of quite a few other items, such as, PVC rigid pipes and conduits (Rs. 5.57 million against Rs. 1.85 million), PVC Gramophone records and accessories (Rs. 9.20 million against Rs 6 million), Plastic electrical assessories (Rs. 6 85 million against Rs. 4.15 million), Laminates (Rs. 2.70 million against Rs. 1.93 million), PVC leather cloth (Rs. 4.10 million against Rs. 3 85 million), PVC foam leather cloth and sheetings (Rs. 1.40 million against Rs. 0.47 million) and Nitrocellulose cloth (Rs. 0.32 million against Rs. 92,016 only).

Expanded polyestyrene products which did not appear at all in exports during 1972-73, however, brought in about Rs. 1 million in the year under review.

Apart from the above, other products in the group which registered moderate increase in export value during 1973-74 included handbags and other PVC fabricated goods, plastic dental products, plastic bangles, G.R.P. manufactures, plastic sequins, PVC sheets and vinyl asbestoss floor tiles.

In the same group, some plastic products the export value of which declined heavily during 1973-74 included spectacle frames (Rs. 9.30 million against Rs. 15.30 million). The decline in respect of vacuum formed products, polyethylene rigid and flexible pipes, polyurethane foam and products and plastic brushes was, however, marginal.

In the linoleum Group, PVC compound (PVC resin) exports rose sharply. From only Rs. 5200 in 1972-73 the exports shot up to Rs. 3 million in the following year. Likewise, plasticisers, which did not appear at all in the exports in 1972-73 fetched as much as Rs. 3.65 million while Melamine formaldehyde moulding powder which was also not exported in 1972-73 earned Rs. 0.20 million. Phenol formaldehyde moulding powder which secured only Rs. 2670 in the preceding year, earned as much as Rs. 1 million. All the above items, in fact, made good the loss suffered by some linoleum products, mainly linoleums (Jute based) the export value of which declined to Rs. 5.80 million (1973-74) from Rs. 8.80 million (1972-73) and linoleums (Felt based) Rs. 0 35 million from Rs. 0.65 million. General purpose polyestyrene exports also came down to Rs. 315 from Rs. 169,960.

UNPRECEDENTED OVERSEAS DEMAND FOR SILK FIBRES

India's export trade in silk fibres (not manufactured into yarn, thread or fabrics) and silk waste reached an unprecedented level of over Rs. 20 million during the first nine months of 1973-74 (April-December 73), registering a sharp increase over the export earning during the corresponding period of the preceding year (April-December '72) at nearly Rs. 5.20 million. The exports were even higher than the total exports during any preceding year—Rs. 7.95 million in 1972-73, Rs. 4.25 million in 1971-72, Rs. 6 million in 1970-71, Rs. 7.75 million in 1969-70 and Rs. 4.90 million in 1968-69.

During April–December 1973, the category of mulberry silk waste netted the bulk of foreign exchange, having earned as much as Rs. 16.60 million. Japan topped the list of overseas customers, having imported worth Rs. 12 million (880 tonnes).

With the purchases valued at Rs. 2.53 million (164 tonnes), Italy constituted the second important market, followed by Korea Republic at Rs. 1.93 million (148 tonnes). Netherlands with limited purchases also figured among importing destinations.

In the full year of 1972-73, exports of mulberry silk waste were of the order of Rs. 7 million. In this year also Japan occupied the position of leading buyer having purchased as much as Rs. 3.48 million. Italy closely followed Japan at Rs. 3.37 million. Among other destinations, Korea Republic was a prominent buyer.

Tasar waste and other wastes which were other categories of silk waste exported during the period were mainly bought by Japan, Italy, Korea Republic and Hong Kong.

In the raw silk sector, mulberry silk constituted the principal item of export with foreign exchange earning of Rs. 0.84 million during April-December 73. Over nine countries imported mulberry silk during the period amongst which Japan, Sweden and USA were significant. In 1972-73, the export earning of the group was, however, negligible.

RISING EXPORT TREND IN ESSENTIAL OILS AND PERFUME MATERIALS

With an export achievement to the tune of Rs. 44.60 million in the first ten months of 1973-74 (April 73—January 74) which even outstripped the exports during the full year of 1972-73 at Rs. 40.80 million, the sector of essential oils, perfumes and flavoured materials is poised to achieve a major breakthrough in exports during the complete year of 1973-74. In fact, it has also broken the stagnating export trend in the preceding years when the average exports were around Rs. 40 million. The foreign exchange earning was Rs. 40.80 million in 1972-73, Rs. 39.25 million in 1971-72, Rs. 38 million in 1970-71 and Rs. 43 million in 1969-70.

During the period under review of 1973-74, a wide variety of essential oils and resinoids were supplied overseas at a value of Rs. 44.26 million. This accounted for almost cent percent of the total exports at Rs. 44.60 million during the period. In the full preceding year also (1972-73), the trend was similar - the exports of essential oil and resinoids totalled Rs. 40.15 million in the entire export value of Rs. 40.80 million in the year.

Among essential oils and resinoids exportd, during the period sandalwood oil constituted the most sought after item which alone secured Rs. 23.40 million (75,477 Kgs.), absorbing the lion's share of the total exports. Of the 24 markets that bought this oil from India, USA was the principal buyer which imported 28,015 Kgs. at about Rs. 10 million. France was the next best purchaser which imported 10,878 kilograms at Rs. 2.92 million. Japan closely followed France having imported 6750 Kgs. at Rs. 2.26 million. Netherlands at Rs. 1.28 million (4600 Kgs.), U.K. at Rs. 1.50 million (5350 Kgs), USSR at Rs. 1.26 million (5250 Kgs.) and Hungary at Rs. 1 million (3990 Kgs.) were significant among other importing destinations.

In the full year of 1972-73, Sandalwood oil had brought in Rs. 27.80 million (119,931 Kgs). USA's purchases were of the order of 10.17 million (43,546 Kgs.). France bought worth Rs. 4.50 million (19,567 Kgs.), U.K. Rs 2.86 million (12,010 Kgs.), USSR Rs. 2.10 million (9500 Kgs), Switzerland Rs. 1.85 million (8050 Kgs.), Japan Rs. 1.82 million (7758 Kgs.), and Netherlands Rs. 1.30 million (5630 Kgs.)

Lemongrass oil which earned Rs. 9.48 million in 1972-73 registered sharp increase in exports at Rs. 17.70 million during April 73—January 74. USSR, constituted the main market for the oils, having purchased worth Rs. 11.55 million (189,750 Kgs.). USSR, was followed by UK at Rs. 2.27 million (55137 Kgs.), USA at Rs. 1.23 million (27,305 Kgs.) and Hungary at Rs. 1.10 million (25,120 Kgs.). In 1972-73, USSR at Rs. 6.58 million topped the list of buyers, followed by UK at Rs. 0.95 million and USA at Rs. 0.52 million.

Eucalyptus oil, palmarosa oil, cedarwood oil, vetiver oil, oil of spices, keora oil, ginger oil, ginger grass oil, clove oil, cinammon leaf oil, peppermint oil and other natural essential oils were also exported.

EXPORT POSITION IN BASIC CHEMICALS & PHARMACEUTICALS

India's export trade in basic chemicals, pharmaceuticals and soaps etc. during the first quarter of 1974-75 (April-June, 1974) was of the order of Rs. 141.40 million as compared to Rs. 163.80 million in the corresponding period of the preceding year and Rs. 83.30 million in the same period of 1972-73, according to the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council, Bombay. In the full year of 1973-74, the export value was of the order of Rs. 698 million as against Rs. 352 million in the preceding year.

During the period under review, the export position of various items under the purview of the Council, indicated a mixed trend. The category of dyes, intermediates, alcohol and coal tar chemicals registered maximum improvement from Rs. 10.85 million in April-June 1973 to Rs. 25.90 million April-June 1974. In the category of basic chemicals, exports improved to Rs. 19.35 million from Rs. 15 million and that of organic chemicals to Rs. 6.50 million from Rs. 2 million. The export of agro-chemicals, however, slided down marginally to Rs. 0.82 million from Rs. 0.89 million. The category of essential oils also improved its overseas offtake to Rs. 10.37 million from Rs. 7.26 million.

The export increase in the above categories could not, however, set off the loss suffered in other categories. The specific categories which brought in reduced foreign exchange during the period under review included drugs, pharmaceuticals and fine chemicals (Rs. 56.56 million in April-June 1974 against Rs. 97.66 million in April-June 1973), Glycerine, soaps, detergents, cosmetics and toiletries (Rs. 5.95 million against Rs. 12.22 million), crude drugs (Rs. 11.15 million against Rs. 13.50 million) and agarbattis (Rs. 3.12 million against Rs. 3.25 million).

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

INDIA'S LARGEST 260 MVA TRANSFORMER TESTED

India's first and largest 260 MVA Transformer, completely designed and manufactured by M/s. Bharat Heavy Electricals Limited (BHEL) has passed all tests. This will be erected and commissioned at Kalpakkam, Madras, Atomic Power Project in Tamil Nadu. A single unit of 260 MVA transformer is capable of meeting the entire requirements of a big city like Delhi.

Another 260 MVA transformer for Madras Atomic Power Project is also under manufacture. This is the second Atomic Power Project being equipped with India-built transformers. The Rajasthan Atomic Power Project at Kota has already been equipped with 250 MVA transformer built by BHEL. Another transformer of the same rating is under erection at Kota. Besides transformers, BHEL's range of supply to Atomic Power Projects, includes 236 MW steam (nuclear) turbine and feed heating plant for Kalpakkam (MAPP) and reactor components for Kota (RAPP). The Bhabha Atomic Research Centre (BARC) has also entrusted to BHEL the work of design, development and fabrication of different types of large coils with water cooled conductors for variable energy eyelotrone being built by BARC.

At Ambazari Sub-station of Maharashtra State Electricity Board, near Nagpur, one-250 MVA transformer is rendering service satisfactorily and another transformer of the same rating is under despatch for Ambazari Sub-station.

The 240-tonne transformer (16.5/230 kV class) has been specially designed to withstand the highly polluted and salt-laden atmosphere prevailing at the site. A very special feature of this 260 MVA generator transformer is the adoption of BELL type construction for the tank. This calls for fabrication skill of the highest class to ensure a perfect and leak proof bell joint, on which the entire oil head in the transformer acts.

The Bhopal unit of BHEL factory has already produced more than 700 numbers of transformers totalling about 18,500 MVA and has recently embarked on the design and manufacture of 400 kV class transformers to keep abreast of developments in the country.

SANTACRUZ ELECTRONICS EXPORT PROCESSING ZONE

Taking into account the vast export potential in the electronic sector field, the Government of India set up the Santacruz Electronics Export Processing Zone (SEEPZ) at Bombay towards the end of 1972-73. The Zone has the twin objective of developing sound infrastructure for the diversified range of electronic products and increasing their exports sizeably.

Already, a number of developed countries in the world which are in the forefront in this line of manufacture, are seriously thinking of shifting their manufacturing operations to developing countires because of alarmingly rising wage levels and other production costs. India which has almost all the required facilities for increased production at comparatively much less cost, offers them attractive opportunities to undertake manufacture at most economic cost. Availability of required technical know-how, inexpensive skilled manpower and infrastructural facilities, besides certain incentives and concessions, are the basic requisites that India can offer to the entrepreneurs of electronic products in the world : thus the Indian Government encourages entrepreneurs both, at home as well as from abroad to invest in a manufacturing operation in the Zone.

The incentives and concessions to be offered by the Indian Government to the prospective entrepreneurs intending to establish a unit in the Santa Cruz Zone include : duty-free import of capital goods and equipment from preferred sources, exemption from customs and additional (countervailing) duty on raw materials, components, consumables, spares, tooling and packaging materials imported; exemption from central excise duties and other levies on products manufactured within the Zone; capital goods, equipment, raw materials, components, spares, tooling and packaging materials supplied to the Zone from the rest of the country treated as exports and eligible for all the concessions, such as, cash assistance, duty draw backs etc. as are available to units in the Domestic Tariff Area exporting out of India.

The Zone offers very attractive terms for foreign investment. It is planned to permit manufacture of items with relatively high sophistication with appreciable 'value added' and which use not only relatively unexpensive skilled labour but also the vast resources of trained, scientific, engineering and managerial talents existing in India. Thus, cent percent foreign companies and their subsidiaries or joint ventures involving foreign equity are not ruled out in the Zone.

Apart from this, infrastrucural facilities, such as, large area, transport facilities, power, water and provision for required space for factory are also provided at the Zone. Among other favourable factors, repatriation of capital, profits and dividends, incentives in taxation, easy and quick raw material import licences etc., are also provided.

The production of industry in India during 1973-74 totalled Rs. 2420 million registering significant increase over the output in the preceding two years at Rs. 2060 million (1972-73) and Rs. 1800 million (1971-72). To its credit, the industry has a surprising production range which covers a number of sophisticated electronic products including consumer electornics and mass communication items, telecommunication equipment, aerospace and defence equipment, computers electronic instruments and components.

India's electronic industry has a large domestic market as well as an expanding export market abroad. During 1973-74, the industry's export earnings are estimated at Rs. 75 million registering nearly 25 percent increase over the preceding year.

INDO-BULGARIAN WORK PLAN IN SCIENCE AND TECHNOLOGY

A science and Technology agreement was recently signed between India and Bulgaria.

The Agreement is consequent on discussions held in New Delhi in February 1974 between representatives of India and Bulgaria for Scientific and Technical Cooperation. Both the countries identified areas of cooperation in Science and Technology and prepared a work plan for the year 1974-75.

The major fields in which India and Bulgaria have decided to cooperate include turbines, pumps and their installations, research and development in ore enrichment, electrolytic refining of copper, ore dressing plants and pilot plants, bacterial method of leaching ferrous and non-ferrous metals, corrosion research, medicinal and oil bearing plants, development of small tractors for agricultural purposes, leather technology and food and wine technology.

The institutions in both the countries which are to cooperate with each other in these areas have also been identified.

India is already having expanding trade relations with Bulgaria. During 1972-73, the two-way trade turnover between the two countries was of the order of over Rs. 276 million as compared to Rs. 193 million in 1971-72.

In the turnover during 1972-73, India's exports to Bulgaria amounted to Rs. 188.60 million as against Rs. 87.50 million in 1971-72, while its imports from Bulgaria in the respective years were Rs. 87.50 million and Rs. 138 million.

AWARDS FOR MERITORIOUS INVENTIONS

The National Research Development Corporation of India (NRDC), New Delhi, has announced awards for meritorious inventions on the occasion of the Independence Day (1974). Seventeen inventors have been awarded Rs. 6000 in cash and 2 Certificates of Merit for development of 7 inventions. Four inventors have been sanctioned financial assistance amounting to Rs. 15,000 for development of 3 inventions.

So far, 406 inventions have been given cash awards totalling about Rs. 0.5 million and financial assistance amounting to over Rs. 0.7 million has been sanctioned for development of 361 inventions.

The highlights of the announcement are : an award of Rs. 2000 jointly to Dr. Debabrata Ghosh and Shri A. Doraikann of Central Leather Research Institute, Madras, for development of an Economic Process for the Manufacture of E.I. Tanned goat, sheep and cow leathers. The new process results in saving of wattle extract, myrab tanning and above all the time required for tanning. Another award of Rs. 2000 jointly to Dr. M.R. Krishnamurti and Dr. S. Srinivasan of Regional Engineering College, Tiruchirapalli relates to the development of low speed self-starting and self-synchronising polpyhase motor. Among other recipients, M/s. P. Ramakrishnan, K. T. Sarkar, V. V. Subramanian and D. P. Mukhopadhaya of Central Leather Research Institute (CLRI), Madras, have been jointly awarded Rs. 1000 for developing a process for Utilisation of Inferior Grade Leathers. By this process any design can be transferred to the surface of leather from specially prepared design on film.

Mr. M. P. George, of Pilani has been awarded Rs. 500 for developing an Inside-Outside Class room Oscilloscope. In this Oscilloscope the circuit is spread out on a board and therefore, the working of the instrument can be easily understood by the students.

M/s. V. M. Bhuchar, A. K. Agarwal, Fanz-Kiss, J. P. Vasisht, Dharam Prakash and O.N.L. Srivastava of National Physical Laboratory (NPL), New Delhi, have been jointly awarded Rs. 500 for improvement in the design of stopeck in a Soxhlet type of apparatus for performing 9 different operations for separation in laboratories.

Shri Subhash Chander Vohra of New Delhi has been awarded a Certificate of Merit for inventing a Deviation Disc used for directly reading tolerances for various types of fits.

Brig. Preetam Pal Singh, of the Institute of Armament Technology, Poona, has been awarded a Certificate of Merit for effecting improvements in both projector and camera resulting in economy in film making and ease in its projection.

VISHVA MADHURI DELIVERED

M.V. 'Vishva Madhuri', a 13,900 deadweight tonnes cargo liner, built in the Hindustan Shipyard for The Shipping Corporation of India Ltd., has been delivered recently. The Shipyard has delivered to The Shipping Corporation four similar vessels at the rate of one vessel every six months since May 1973.

Vishva Madhuri is the 64th vessel built by the Yard and was launched in August 1973. This is also the 29th vessel built in the Yard for the Shipping Corporation of India Ltd., Bombay. It is the last of a new series of ships built for M/s. Shipping Corporation of India Ltd., with Machinery three-quarter aft and entirely designed in the Hindustan Shipyard, conforming to the highest classification of Lloyd's Register of Shipping. A 60-Ton derrick on the foremast is fitted for lifting heavy cargo. Fitted with a single acting, two stroke, direct reversible cross-head type turbo charged Diesel engine, this vessel will develop a speed of 17.65 knots at 10,500 BHP at 122 R.P.M. The vessel has been equipped with the latest navigational aids and has also a large refrigerated cargo carrying capacity of 31,099 Cubic feet.

Hindustan Shipyard has so far built and delivered 63 ships including small crafts aggregating a cargo carrying capacity of about 5,38,000 tonnes deadweight.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

HONING MACHINE DEVELOPED

A horizontal honing machine has been recently designed and fabricated by the Bhabha Atomic Research Centre (BARC), Bombay.

The newly designed machine is a high precision finishing operation machine. Honing is considered as a preferred method of finishing bores to critical tolerances and surface finish.

Hydraulic systems are adopted for the 5 tone-feed mechanism and reciprocation. Rotary motion is imparted to the spindle from an electric motor through a gear box. The machine bed is of fully welded construction and not of heavy castings as is the normal practice.

Certain grades of bonded honing stones have been indigenously developed and efforts are also being made to get the fine grain stones locally.

The present capacity of the machine is to have a bore of 50 mm to 725 mm with a 2000 mm spindle which could be extended to 3000 mm.

The spindle has been designed for a single speed to suit a particular job, but a multi-speed unit could be made by changing certain components and making the speed variable.

The machine has been in continuous operation for about 3 months on the production of certain components for power reactors.

It is learnt that the machine can be manufactured without imported components and would be comparatively inexpensive as compared to its imported counterpart.

BRICKS FROM PADDY HUSK

The Regional Research Laboratory (RRL), Jorhat, has developed a technique for making bricks from paddy husk.

A wall made of such bricks at Jorhat has withstood three seasons. These bricks are said to be useful for small constructions. They are lighter, cheaper and easier to handle than burnt clay bricks and are claimed to have better insulation properties.

The basic raw materials for these bricks are soil, paddy husk, cement and chemicals.

LOW COST MICROPHONE

The Central Electronics Engineering Research Institute, Pilani, has developed a low cost ceramic microphone, which is robust and unaffected by humidity and temperature. All the raw materials required for the manufacture of ceramic microphone, ceramic elements, plastic and rubber moulded parts and copper brass and aluminium foils are indigenously available. The minimum economic unit would be 30,000 pieces per annum. The total fixed capital to set up this unit has been estimated at nearly Rs. 2 lakhs. Out of this nearly Rs. 50,000 will be needed for plant and equipment.

OIL INDUSTRY IN INDIA

Oil was first struck in India (Upper Assam) in 1828. However, the first drilled well came in 1867. In 1889 Digboi oil field was discovered and one of the earliest refineries in the world, was built in 1893 at Margharite (Assam) for refining Digboi oil. It was later shifted to Digboi in 1900.

In 1947 only Digboi refinery was in operation processing 0.2 million tonnes of Assam oil. In 1954-57 three refineries were set up–Burma Shell and Esso at Bombay and Caltex at Vishakhapatnam for refining about 4 million tonnes of imported crude, mostly from Persian Gulf. With the discovery of crude in Gujarat and Assam in the fifties, refineries were set up in public sector and joint sectors–Gauhati in 1962 with

Rumanian assistance and Barauni with USSR assistance. A third refinery was set up in Koyali in Gujarat with USSR assistance. All the three used indigenous crude.

By 1960, it was realised that supply of refined products was not enough and it was necessary to import these. More refineries based on imported crude were found necessary. So a joint sector came into being–the first being Cochin refinery in 1966. The second refinery came at Madras in 1969 with minority participation of AMOCO of USA and NIOC of Iran. Lube India with 50 per cent Esso and 50 per cent Government of India participation set up lubricating oil base stock refinery at Bombay blending from imported lubricating oil base stocks. Now two plants have been set up for base stock-one at Bombay and the other at Madras. A third is now coming up at Haldia. The total capacity of the nine refineries set up by 1970 was 20 million tonnes, more or less. matching the consumption level in 1970.

DEVELOPMENT OF EXPERTISE

Institute of Petroleum Technology was set up in early sixties with the assistance of IFP of France. Engineers India, set up in 1966, has gained expertise in design, engineering and contstruction of refineries and similar plants. The Indian Oil Corporation is setting up a Research and Development Centre, at Faridabad for development of proprietory brands of lubricating oils, greases and other specialities to meet special demands of railways, defence etc. The Centre will also provide specialised technical services to consumers. IOC and EIL have set up a Central Service Organisation (SSC) to render advisory services on maintenace, corrosion and related problems to various units of IOC and other organisations. It is already rendering such services to Ceylon Refinery of Sri Lanka. It is also engaged in developing indigenous materials and expertise to replace imports. A considerable headway has been made in development of indigenous materials and equipment. Most of the refinery equipment like pressure vessels, columns, heat exchangers, pumps, valves are now manufactured in India. The indigenous component of equipment in Madras Refinery was 60 per cent. In the Haldia Refinery, under construction, it would be 70 per cent.

TRAINING

All refineries have now well equipped training departments to impart 'on the job' training to engineers and technicians.

PRODUCTION PATTERN

In early fifties the three private oil refiineries were designed on the basis of motor gasoline demand. The demand is now more for middle distillates, (Kerosene, diesel oil). The new refineries were designed to produce more of the latter products. The light distillates, especially naphtha, which were surplus are now in short supply because of the use of naphtha for fertiliser feed stocks and petrochemicals.

DEMAND PATTERN

Because of rural nature of the country, kerosene is in great demand for lighting and cooking and diesel for trucks. From 1948 to 1972 the growth rate in demand was 9.4 per cent. The present consumption is 25 million tonnes and the refining capacity is 24 million tonnes, yielding a product of 22.3 million tonnes. As such 2.7 million tonnes of products such as, kerosene, diesel and furnance oil have to be imported. The projection of demand for 1978 was 41 million tonnes but after the recent curbs on consumption, it has been brought down to 38 million tonnes.

ADDITIONAL REFINERIES

The refining capacity has to be increased from the present 24 million tonnes to 38 million tonnes by 1978. Another new Cochin refinery (2.5 million tonnes), expansion of Cochin (0.8 million tonnes), Mathura (6.0 million tonnes), Bongaigaon in Assam (1.0 million tonnes) Koyali expansion (4.3 to 7.3 million tonnes). are proposed to be set up by 1978. The total refining capacity would be 38 million tonnes giving a product of 37 million tonnes by 1978.

TRANSPORT

Pipeline transport is being adopted to replace railways and trucks. The first crude oil pipeline from Naharkatia to Barauni and Gauhati in Assam is 1152 Km. long. There is a 425 Km. long products pipeline from Gauhati to Siliguri and another from Barauni to Haldia and towards the west to Kanpur covering a

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total length of 1192 Km. In the western sector Koyali Refinery is connected with Gujarat oil fields by a crude pipeline and with Ahmedabad by a products pipeline. The crude oil for Mathura refinery is to be transported through a crude oil pipeline about 1200 Km. long from a single buoy in deep waters in the Gulf of Kutch. The off shore terminal would be capable of taking tankers of 0.2 to 0.25 million dwt. Koyali Refinery is also to be connected with this buoy. Then, a Mathura-Ambala product pipeline and Bombay Poona products pipe line would be built up.

EXPLORATION FOR OIL

New exploration on Bombay High has started. Two more projects in collaboration with US firms have also been set up. Still the production may not go beyond 13 million tonnes by 1980. The gap will thus be 25 million tonnes in stead of the 12 million tonnes in 1970.

PETROCHEMICALS

The development of petrochemical industries is comparatively a recent one. The first integrated petrochemical complex at Trombay was established in 1966 by Union Carbide (India) Limited and the second naphtha cracker was commissioned in 1968 by the National Organic Chemical Industries Limited. The Udex plant at Gujarat refinery for the production of Benzene and Toluene was commissioned in 1969. The Indian Petrochemical Corporation Limited, the first of its kind in public sector, will have a giant petrochemical complex at Jawaharnagar near Baroda. This complex includes a number of units such as a xylene plant, a DMT plant, a naphtha cracker, polymer plants etc. The Aromatics plant is already on stream. The second Aromatics plant in the public sector will be set up at Bongaigoan in Assam state, and there are proposals to put such plants at a number of locations like Barauni and Haldia. All these projects will produce basic raw materials for the production of synthetic fibres, synthetic rubbers, polymers and a numbers of organic chemicals. Besides these projects, a number of plants use naphtha as feedstock for the production of a variety of chemicals. Thus the petroleum industry is contributing in a large way to the development of chemical and allied industries in the country. ☐

Attention

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NDIAN EQUIPMENT FOR ALAYSIAN POWER STATION

Testifying to the competitive quality and reliability its products already in service in Malaysia, the Bharat eavy Electricals (BHEL) factory at Bhopal, a public ctor unit, has undertaken to execute the extension ogramme of the Glugor Sub-station at Penang in alaysia. The Sub-station is already operating with rcuit breakers and associated epuipment manufactured d supplied by the Bhopal factory.

The order for the supply of equipment for the tension programme has been secured by the Bhopal ctory in the face of global competition.

The extension programme, on completion, will gment power supply in the Penang island, located out 8 Kms from the mainland of Malaysia.

Three sub-stations under the National Electricity Board of Malaysia are already being equipped with India-built power transformers. These transformers, designed and manufactured by the Bhopal factory include, amongst others, two power transformers, 75,000 KVA each, the largest ever to be exported from India. Additionally, large motors with ratings 2,500 HP and 1,300 HP manufactured and supplied by the Bhopal Factory have recently been commissioned at Kufa Cement Plant in Iraq. These are also understood to be the largest motors exported from India.

BHEL's products ars in demand in a number of countries including Malaysia, Singapore, Ghana, Iran, Kuwait and Malawi.

BHEL's unit at Bhopal is the first and the largest factory in India for the manufacture of the entire range of heavy electrical equipment at one place. Total production of the factory was of the order of Rs. 770 million in 1973-74. The cumulative output so far is valued at about Rs. 3,500 million.

UPTREND IN EXPORTS OF BOLTS AND NUTS

Nearly Rs. 11.30 million worth of foreign exchange was secured in 1972-73 through export of bolts, nuts, nails, screws, rivets and other similar articles of iron, steel or copper. The export value of these products was Rs. 12.30 million in the year that preceded. This has witnessed an uptrend in 1973-74. Actual exports during the first eleven months of the year (April '73-February 74) amounted to about Rs. 19.65 million as against Rs. 11 million in the corresponding period of 1972-73.

Of the total foreign exchange earning of the group during April 73-February 74, nuts, bolts, screws, rivets, and washers alone accounted for as much as Rs. 17.11 million. Among these, bolts of iron or steel (with or without nuts) proved to be the items of large overseas offtake. Their earning was of the order of 8.62 million. U.S.A., Iran and Sudan were the major markets. Screws of wood of iron or steel constituted the next best items of export dynamism with an earning of Rs. 3.48 million, mainly from U.S.A. The share of nuts (iron or steel) was of the order of Rs. 2.38 million. U.K., U.S.A., Iran, Czechoslovakia and Lebanon were the important buyers in order of the value of their intake. The export earning of other prominent products in the category was : machine screws Rs. 31,000; rivets of iron or steel Rs. 210,800; washer springs and other washers Rs. 292,700 and Rs. 780,650 and bolts and nuts of copper Rs. 91,000.

The earning of rails, tacks and staples etc. was limited to Rs. 2.52 million.

Adding to the export effort in the line M/s. Fit Tight Nut and Bolts Ltd. (Old Ashram, Andheri–Kurla Road, Bombay) succeeded in stepping un their exports to Rs. 0.26 million from barely Rs. 0.10 million in the preceding year. The firm is engaged in manufacture of cold forged high tensile precision nuts, bolts and socket head cap screws to various international standards.

STEEL PIPES AND TUBES IN EXPORT TRADE

With about fiftythree per cent of its production of pipes sold abroad, M/s. Zenith Steel Pipes Ltd. (Moti Mahal, 195, Churchgate Reclamation, Bombay), stepped up their export to a record level of Rs. 58.80 million in 1973-74. The total sales also increased to Rs. 177.30 million during the year from Rs. 97 million in the preceding year (1972-73), registering an improvement of nearly 83 per cent.

If the firm's exports at Rs. 27.70 million during the first four months of the current year against

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Rs. 11.10 million in the same period of the preceding year is any indication, they have still brighter prospects in the export field during 1974-75. Their total sales during the two comparable periods were valued at Rs. 92 million and Rs. 45.20 million, respectively.

The licensed capacity of the firm's plant is estimated at 91,000 tonnes. During the first four months of the current year, their production of steel pipes was up at 16,000 tonnes against 14,000 tonnes during the corresponding period in the preceding year.

The firm is reported to have lately entered into a technical collaboration agreement with an American firm for manufacture of industrial knives. Its mini steel plant at Khopoli is also expected to go on production stream shortly.

Total exports of steel or iron tubes, pipes and fittings from India aggregated to Rs. 190.42 million in 1973-74 (up to February 1974) as compared to Rs. 105.40 million in the corresponding period of the preceding year. During the year, galvanised and non-galvanised tubes and pipes of iron and steel (except cast iron welded) alone fetched as much as Rs. 145.72 milllion in foreign exchange. Saudi Arabia, U.K., Dubai, Iraq, Abu Dhabi, Federal Republic of Germany, Iran, Jordan, Kuwait, Libya and Qatar were the major destinations. The other principal variety exported during the period included tubes and fittings of iron or steel. These earned Rs. 29 million in markets abroad. The supplies were directed mainly to Czechoslovakia, Iraq, Poland and Singapore.

EXPORT PERFORMANCE AND POTENTIAL

SPURT IN SPORTS GOODS EXPORT

The exports of sports goods from India attained a record level of Rs. 59 million in 1973-74 as compared to Rs. 36 million in 1972-73 and Rs. 25.5 million in 1971-72. This achievement was 20 per cent higher than the target fixed for the year 1973-74.

Footballs and leather balls constituted the leading export items in the group of sports goods during 1973-74. These earned as much as Rs. 23 million against Rs. 14 million in 1972-73. Tennis, badminton and squash rackets which made up the next best items of export dynamism, netted Rs. 8 million in foreign exchange against Rs. 5 million in the preceding year. Cricket bats and requisites netted Rs. 6 million against Rs. 3 million while hockey sticks and requisites were sold abroad at Rs. 4 million compared to Rs. 2 million. During the year, EPNS sports cups doubled their earning to Rs. 6 million from Rs. 3 million.

Among new items which made a significant achievement in exports in 1973-74, were sports shoes and shoes uppers which were sold abroad at a value of Rs. 1 million compared to only Rs. 0.3 milllon in 1972-73. Similarly, rubber balls, rubber balloons and gymnastic goods which had only negligible export earning in 1972-73 also gained appreciable popularity in foreign markets during the year that followed.

The traditional pattern of directionwise exports was maintained during the year 1973-74 with U.K. purchasing nearly Rs. 20 million worth of Indian sports goods. It contributed nearly 33 per cent to the total foreign exchange earning in the field in the year. Federal Republic of Germany also bought more at Rs. 8 million compared Rs.3 million. Australia with an intake worth Rs. 5 million (against Rs. 2 million in 1972-73) was the next important destination.

Exports to other destinations during the two comparable years were : U.S.A. Rs. 3 million and Rs. 2 million; Malaysia and Singapore (together) Rs. 2 million and Rs. 1 million; Holland Rs. 1 million and Rs. 0.7 million; Nigeria Rs. 1 million and Rs. 0.7 million; Sweden Rs. 1 million and Rs. 0.3 million and Spain Rs. 0.3 million and Rs. 0.2 million. Appreciable headway was made in switzerland where the Indian supplies of the sports products reached a level of Rs. 0.7 million while in the preceding years these were limited to only a few thousand rupees. Likewise, there was a marked improvement in sales to Australia and Bulgaria. Their intake during 1973-74 doubled to Rs. 0.2 million each. The export level was more or less sustained in the case of Poland and France at Rs. 2 million and Rs. 1.80

million, respectively. The exports to West Asian and African countries were also maintained at the preceding year's level. It is anticipated that sports goods exports to these countries will improve appreciably during the current year owing to certain promotional measures being undertaken by the Sports Goods Export Promotion Council, Delhi.

Major buyers for sports goods from India include U.S.A., Canada, Australia, U.K., Denmark, France, Federal Republic of Germany, Nigeria, Sudan, Tanzania, Iran, Netherlands and Singapore.

Highly labour intensive, the sports goods industry in India has in its infrastructure more than 650 units of large, medium and small size. The production range of the industry includes items of indoor and outdoor games, such as, cricket bats, balls, stumps, batting and wicket keeping gloves and other requisites of cricket, hockey balls and sticks, footballs and gloves, badminton and tennis rackets, tennis balls, polo equipment, golf gloves, punching gloves, boxing gloves, basket balls and base balls. Apart from these, a complete range of indoor games items and a wide variety of instruments for physical exercise and E.P.N.S. sportsware are also manufactured by the industry.

MEXICAN TARIFF PREFERENCES OF EXPORT INTEREST TO INDIA

The tariff preferences offered by the Mexican Government recently under the Protocol ratified by it for exchange of tariff preferences cover a number of items that are of export interest to India. These items included shellac, guar gum, marine products, castor oil, biscuits and confectionery, salt, carpets, cotton yarn, perfumes and cosmetics, sports goods, antibiotics, medicaments, paints and varnishes, motor tyres and tubes, agricultural implements, iron and steel, aluminium and copper items, rails, cutlery, interchangeable tools, lathes, boilers, electric generators, electric lamps, refrigerators and telephonic and telegraphic apparatus. India also grants preferences on some 27 items under the Protocol.

The protocol has come into effect from August 29, 1974. The offer list broadly includes steel sleepers, rails for railways, handtools, steam turbines, hydraulic turbines, gas turbines and weaving and knitting machines. The preferences offered on these items vary from 25 to 50 per cent of their standard rates of duty.

In February, 1972, 16 developing countries including India, had signed a Protocol under the aegis of GATT providing for exchange of tariff preferences among themselves on the basis of agreed lists of items. The Arrangement came into force in February, 1973, when half of the signatory countries ratified the Protocol.

Of the 16 signitories, 11 countries had ratified the Protocol till May, 1974. These include, among others, Brazil, Chile, A.R.E., India, Republic of Korea, Spain, Tunisia, Turkey and Yugoslavia. The tariff preferences offered by these developing countries vary from 5 to 50 per cent on their standard rates of duty.

OVERSEAS DEMAND FOR ELECTRICAL POWER MACHINERY UP

Registering nearly 29 per cent increase, India's exports of electrical power machinery netted nearly Rs. 63 million in foreign exchange during the eleven months of 1973-74 (April 73 - February 74) as against Rs. 48.55 million in the corresponding period of the preceding year. Interestingly, the exports even outstripped the total foreign exchange earning during the complete years of 1972-73 and 1971-72 at Rs. 56 million and Rs. 47 million respectively.

In the total foreign exchange earning during the period under review, electrical power machinery secured Rs. 30.90 million while electrical apparatus for electrical circuit earned Rs. 32 million.

In the category of electrical power machinery, transformers in various ranges accounted for a sizeable export earning at Rs. 11.75 million. Malaysia, Uganda, Zambia, Sri Lanka, Mauritius, Kenya and Singapore were the significant markets. Additionally, transformer parts brought in another Rs. 2.25 million mainly from Kenya and Dubai. A.C. squarel cage induction motors, AC slipping motors, electric motors and other types of electric motors upto 50 HP together earned Rs. 10.50 million. Federal Republic of Germany constituted the principal buyer for these motors. New Zealand, UK, Thailand and Sri Lanka were the other significant importing destinations. Additionally, electric motor parts and accessories were also supplied at a value of Rs. 1.42 million. Generators of various types, such as, AC and DC generators, complete generating sets with diesel engines and steam engines and parts were also exported at a cost of Rs. 2.60 million. Singapore, Malaysia, Sudan, Bangladesh, Saudi Arabia, and Tanzania Republic were the leading importing destinations.

Apart from these, rectifiers and rectifying apparatus, choke coils, other power machinery and parts also figured in the export range of electrical power machinery during the period.

In the category of electrical apparatus for electrical circuit, oil circuit breakers in various volts, motor starters, motor control gears, switch fuse units in different ratings, fuse rewirable and of high rupturing capacity, relays, switch boards and control panels, plastic switches and those made from other materials, control and switch gears, potentiometres, automatic voltage regulators, lightning arrestors, plastic plug socket holders and those of other material and parts and accessories of switch gear constituted the siguificant export items. Malaysia, Nepal, Libya, Iraq, UK, Hong Kong, Sri Lanka, Nigeria, Indonesia Kuwait, Poland and Dubai were the significant markets.

CASHEW EXPORTS IMPROVED

Indian overseas supplies of cashew kernels during the first half of 1974 (January—June 74) recorded about 60 per cent increase over those of the corresponding period in 1973. The exports during the period secured Rs. 431 million as compared to Rs. 267.60 million. This net increase of Rs. 163.50 million was achieved mainly through higher unit value realisation as the export quantum during the two comparable periods amounted to 23,980 tonnes and 124,587 tonnes, respectively.

USSR alone accounted for 41.82 per cent of the total Indian overseas supplies during the period (January—June 74) as against nearly 24 per cent in the same period of 1973. Its intake in the two periods was of the order of 10,030 tonnes and 5890 tonnes respectively. Besides USSR, other significant buyers whose intake increased during January—June 1974 as compared to that in the same period in 1973 were: Canada 2137 tonnes against 2191 tonnes; Japan 1091 tonnes against 910 tonnes; Australia 752 tonnes against 357 tonnes and Hong Kong 579 tonnes against 213 tonnes. Federal Republic of Germany, UK, Netherlands, German Democratic Republic and Czechoslovakia were the specific importing destinations whose purchases suffered decline during the period. For instance, Federal Republic of Germany's imports reduced to 472 tonnes from 527 tonnes while that of United Kingdom's slided down to 444 tonnes from 734 tonnes. Netherlands reduced its intake to 384 tonnes from 459 tonnes, German Democratic Republic to 374 tonnes from 567 tonnes and Czechoslovakia to 42 tonnes from 432 tonnes.

The foreign exchange earning of cashewnut shell liquid almost doubled during the period to Rs. 3.61 million from Rs. 1.85 million in the comparable period last year.

Notwithstanding the increase in value during the period, the export quantum, however, was almost the same as in January—June 1973. In all, 1757 tonnes and 1722 tonnes were supplied during the respective periods. This obviously indicates more unit value realisation.

USA was a significant market for cashew shell liquid. It improved its intake sharply to 677 tonnes from 305 tonnes. Rumania and Spain which did not import at all last year (January-June 1973), bought 100 tonnes each. UK and Japan, however, reduced their purchases by almost 50 per cent each. In respect of

UK, the quantum reduced to 405 tonnes from 813 tonnes while in the case of Japan, it came down to 252 tonnes from 480 tonnes.

EXPORT TREND IN TOBACCO

The export earning from unmanufactured tobacco during the first four months of 1974-75 (April-July, 1974) revealed marginal decline as compared to the export value in the same period of the preceding year. The exports were at Rs. 375.25 million and Rs. 381.60 million in the respective periods. The quantumwise overseas supplies during the period under review however, indicate sharp decline—29,678 tonnes (April-July 74) against 38,666 tonnes (April-July 73), according to the Tobacco Export Promotion Council, Mount Road Madras.

Excepting United Kingdom, Africa and Middle East, most of the regions imported less during April-July 74 as compared to their intake in the corresponding period of the last year. United Kingdom raised its purchases from Rs. 205.75 million (April-July 73) to Rs. 240.50 million (April-July 74) but in terms of quantity, its intake came down marginally from 17,524 tonnes to 17,117 tonnes. The Africa region increased its imports manifold from only Rs. 1.65 million to Rs. 14.75 million. Quantumwise. its purchases gone up from only 733 tonnes to 1663 tonnes in the respective periods. Middle East region also improved its purchases from nearly Rs. 2 million to Rs. 3.80 million.

Other regions which bought less during the period under review, included Eastern Europe (Rs. 50.40 million against Rs. 77.55 million), South and South East Asia (Rs. 49.85 million against Rs. 71.76 million) and West Europe (Rs. 15.80 miilion against Rs. 22.77 million).

Among other countries, USA did not import at all during April-July 74 while New Zealand and Fiji Islands bought slightly more than their purchases in the preceding year.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

KANDLA FREE TRADE ZONE

The first of its kind in India, the Kandla Free Trade Zone has been set up in the Kutch District of the Gujarat State by the Government of India in 1965 as an export promotion measure.

Spread over an area of 284 hectares, the Zone aims at establishment and promotion of growth of export oriented industrial sector, improvement in the production of goods at economic cost for overseas markets, and export of cent percent production in the Zone.

The Zone has been developed in a way that it can provide the requisite facilities needed for setting up an industrial estate. Of the total area (284 hectares) occupied by the Zone, 130 hectares have already been developed for setting up 200 industrial units and warehouses.

Already a number of products like stainless steel utensils, embroidered fabrics, knitting machines, medicinal and pharmaceutical products, artsilk fabrics, tin-packed processed peanuts and cashew nuts, spectacle frames and fancy goods are under production in the Zone.

The Zone offers attractive concessions and facilities for the alround growth of the manufacturing units operating in it. The concessions and facilities ensured by the Zone include provision for import of the latest type of plant and machinery not indigenously available, grant of advance import licences on merits from the preferred sources for raw materials, intermediates, components and spare parts required for export production for six months without the party being required to produce firm orders; issue of replenishment licences to ensure an uninterrupted supply of raw materials against actual exports as per the Indian Government's policy for the registered exporters in the rest of India and grant of higher inputs than the permissible limit, on merits.

Among others, certain tax concessions to entrepreneurs in the Zone, exemption from custom duty on plant, machinery, raw materials and consumable stores imported for production of export goods, exemption from central excise duty on indigenous excisable goods to be used as raw materials in the production of export goods. Besides, exemption from central excise duty is also granted on the products manufactured in and exported from the Zone. Income tax is also not levied on the remittance of capital into Kandla free Trade Zone from a foreign country.

New industrial units going on production stream upto 31st March, 1976 will be exempted from income tax on their incomes upto 6 per cent of the capital invested subject to certain conditions. The Indian Government also assures financial assistance and foreign exchange for visits abroad.

The Gujarat Government is also actively considering granting exemption from the payment of Sales Tax on all the intermediates, components and raw materials purchased and brought into the Zone from outside within the State of Gujarat for use in the manufacture of export oriented goods. Apart from this, transport subsidy at 1 per cent of the F.O.B. value of exports from March 1st, 1974 is also allowed to the units for the additional transport cost they have to incur in the absence of regular liner services at the Kandla Port.

The industries which may be considered for establishment in the Zone primarily for export include among others, finished leather industry, footwear industry (including moulding footwear), leather articles industry and travel goods industry.

Since its inception in 1965, upto January 1974, the Zone has succeeded in effecting export trade worth Rs. 51.43 million. In 1973-74 (upto January 1974), the exports from the Zone amounted to Rs. 12 million while in the preceding year the exports were as much as Rs. 15.12 million.

FERTILISER PLANTS TO START PRODUCTION

The NPK Plant of the Indian Farmers Fertiliser Cooperative Limited (IFFCO) at Kandla has been commissioned recently.

The first consignment of 15,250 tonnes of phosphonic acid, the main raw material for the manufacture of NPK has recently been unloaded into IFFCO's tanks at Kandla. IFFCO has entered into a three year contract with Shahpur Chemical Company of Iran for the supply of phosphoric acid which is in extreme short supply in the world market.

The largest of their kind in India, the two plants of IFFCO at Kalol and Kandla, with a capacity of 400,000 tonnes each of urea and NPK respectively are nearing completion.

The ammonia plant which is already under commissioning is expected to go into production within a month or so. The ammonia from Kalol will be transported to Kandla in IFFCO's own tank cars specially designed and built for the purpose.

Indian fertiliser Industry is striving hard to improve production of fertilisers of all types. The constant process of modernisation of Indian agriculture has made it imperative for the industry to improve fertiliser output notwithstanding various constraints at production level. The industry has been active in increasing output with a view to meet the bulk of home demand.

The installed capacity in respect of nitrogenous fertilisers (N) is being expanded from time to time by way of expanding the existing units as well as through setting up of new units. For instance, the capacity which was of the order of 1.46 million tonnes during 1973 in the area of nitrogenous fertiliser has been stepped up to 1.94 million tonnes in 1973-74. At present, the capacity in the area of phosphatic fertilisers (P_2O_5) is of the order of 0.50 million tonnes. Of this, the capacity installed in the public sector is about 1.13 million tonnes of Nitrogen and 0.20 million tonnes of P_2O_5.

In addition to the capacity already installed, projects under implementation are expected to create further capacity of nearly 4.3 million tonnes of N and 0.12 million tonnes of P_2O_5.

The fertiliser corporation of India (FCI), the major public sector undertaking in the field, has 6 operating units, namely, Sindri, Nangal, Trombay, Gorakhpur, Namrup and recently commissioned Durgapur unit. The capacity developed by the Corporation so far is 537,800 tonnes of Nitrogen and 36,000 tonnes of P_2O_5. The Corporation is also implementing a large programme of expansion.

Besides FCI, M/s. Madras Fertiliser Corporation at Manali near Madras, (annual capacity 164,000 tonnes of N and 85,000 tonnes of P_2O_5), M/s. Fertilisers and Chemicals Travancore Limited (FACT), Udyog Mandal, Kerala (82,000 tonnes of N and 35,000 tonnes of P_2O_5) and its Cochin Plant (Phase I) and (II), M/s. Pyrites Phosphatics and Chemicals Ltd., and some units in the private sector are engaged in the production of a variety of fertilisers. In addition to these, units in the cooperative sector have also come to contribute their endeavour in fertiliser production.

SEAMLESS TUBES TO BE MANUFACTURED INDIGENOUSLY

The Bharat Heavy Electricals Limited (BHEL), is to set up a captive seamless steel tube plant at Tiruchirapalli shortly. Valued at about Rs. 200 to 250 million, the plant would use scrap of BHEL's own heavy boiler plant and railway workshop at Tiruchirapalli for the manufacture of these tubes. The indigenous manufacture of these tubes is expected to result in sizeable foreign exchange saving every year. Necessary steps are underway for seeking foreign collaboration for this project.

Import saving to the tune of Rs. 130 million would be achieved when the plant will commence production on regular basis. India annually imports a variety of seamless steel tubes from abroad. In 1972-73, for instance, the imports in the line totalled as much as Rs. 160 million while in the preceding year (1971-72) the outgo in foreign exchange on this account was nearly Rs. 150 million.

Seamless tubes in various ranges, such as, seamless carbon steel tubes upto 114 PT 3 mm diameter, above 114 PT 3 mm diameter, above 219 PT 1 mm diameter, seamless alloy steel tube upto 114 PT 3 mm diameter, above 219 PT 1 mm diameter and seamless pipes of Iron or Steel appear in the import bill of India. Japan, U.K. USSR, Federal Republic of Germany, France, Sweden, Bulgaria and USA constitute the major suppliers.

Nothwithstanding a number of botllenecks faced by India's Heavy Industry sector in recent years, the production level in this sector is being maintained. For the year 1974-75, the public sector industries are estimated to achieve output at Rs. 5300 million against only Rs. 2800 million two years ago. Capacity utilisation too has gone up to 60—110 per cent.

DEVELOPMENT OF INDIGENOUS ELECTRICAL TECHNOLOGY

With the claim to have designed and developed a completely indigenous 33 KV, 750 MVA 1250 Amps. outdoor minimum oil content CIRCUIT BREAKER for the first time in India, M/s. Jyoti Limited, Baroda, Gujarat, have achieved a major breakthrough in the field of power machinery manufacture. Viewed against the background that imported knowhow and foreign collaboration is a common feature in the manufacture of such sophisticated electrical items, the firm's endeavour deserves mention.

Testing facilities for high voltage circuit breakers in this rating being not available in India, the firm had it tested in the internationally recognized high power laboratory of the Research Institute for Electrical Engineering in Czechoslovakia as per the latest edition of IEC-56, it is learnt. The product has stood the specified tests and has amply proved the capabilities of Indian technologists in the field.

The firm has also developed a 33 KV Cast Resin Current Transformers. Way back in 1963, the firm had adopted solid insulation for instrument transformres which was then an improvement over the conventional insulants like oil compound, varnish-type bakelite paper or phenolic mouldings. The important feature of the recently developed current transformers is this that even in highly developed countries, the range of 33 KV has hardly been exceeded in respect of cast resin current transformers

The firm was awarded with a Bronze Shield by the National Research Development Corporation (NRDC) for its contribution to the country's import substitution programme.

The Baroda firm's research activities in the field yielded fruitful results which enabled it to raise the insulation level of current transformers from 11 KV to 33 KV. The firm is engaged in manufacture of these 33 KV current transformers since 1966 and is thereby helping the country to save sizeable foreign exchange.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

RESEARCH IN INSTANT TEA

A formula for making instant tea has been discovered by a team of research scholars of the Department of Applied Chemistry of the Calcutta University, according to the "Planters Chronicle".

It is stated that tea testers and experts, both Indian and foreign, have acclaimed samples of 'Instant Tea'. These samples are powdery and have a good flavour. These are readily soluble, both in cold and hot water and have been prepared from black and green tea leaves from Assam and Darjeeling, the areas well known for the production of quality tea.

Apart from this, one more formula is reported to have been invented by a private researcher from Kurseong in the Darjeeling region for instant tea after 20 years of private research. According to the Planters Chronicle, the demonstration made by the researcher indicated that three types of tea—raw tea, milk tea and ordinary tea—added with milk and sugar could be made. According to the researcher, the instant tea was produced by a natural process. It would not have any side effect on the consumer.

The Applied Chemistry Department of the Calcutta University is also reported to have developed a valuable use for tea sweepings which were hitherto being thrown as waste. The department also claims to have developed polyphenols and polyphenol derivatives which are used as preservatives in various food products including vanaspati.

India's exports of instant tea (extract, essence or concentrated form of tea mate) are very limited at present. For instance, during 1972-73, the exports amounted to nearly Rs. 6 million. In terms of quantity, 181,222 Kgs. were supplied abroad during the year. USA constituted the bulk importer during the year having purchased 112,070 Kgs. at a value of about Rs. 3.95 million. UK, the second best buyer, bought 69,140 Kgs at a cost of nearly Rs. 2 million. Federal Republic of Germany also imported about 15 Kgs.

The export trend in the following year (1973-74) was the same as in 1972-73. During the eleven month period of 1973-74 (April 73 - February 74), the exports totalled Rs. 5 million and the export quantum of 154,504 Kgs was shared by USA and UK at 105,065 Kgs and 49,440 Kgs at the cost of Rs. 3.42 million and Rs. 1.64 million respectively.

DEVELOPMENT OF NEW LUBRICANT

A lubricant from wool grease has been evolved by the Indian Institute of Petroleum (IIP), Dehra Dun. IIP has developed a simple and economical process for the preparation of lancolin from crude wool grease.

The lubricant (Lancolin) is used in the preparation of soaps, paints, rust preventors, adhesive tapes, pharmaceuticals and cosmetics. Experiments conducted by IIP have disclosed that the Lancolin could be produced at cheaper cost on account of the new method.

DEVELOPMENT OF 11 KV PARAMITE POWER CABLE

A vital breakthrough in PVC insulated power cable with working voltage of up to and including 11 KV unearthed system is reported to have been achieved by the Indian Cable Co. Ltd., (INCAB), Calcutta. Their 11 KV PARAMITE PVC insulated cable, developed after several years of research at the company's PVC compounding and extrusion plants at Tatanagar has passed a crucial technical test, believed to be a pioneering achievement in the cable manufacturing process in India.

Called the Partial Discharge Test, it detects the minutest discharge in the cable which if corrected at the manufacturing process greatly enhances the cable life.

This new cable from INCAB strictly conforms to IS : 1554 (Part II)–1970 and is now being delivered to power the giant 198 MW Ramganga Hydel Power Station in U.P., now under construction. These cables were tested in their test house and witnessed by a senior representative of the Uttar Pradesh State Electricity Board to full satisfaction.

INSTRUMENTATION INDUSTRY– HIGHLIGHTS

Instrumentation technology has witnessed rapid strides in the Indian economy in recent years. Alongside achieving significant production growth and diversification in the engineering sector, Indian economy has simultaneously built a sound base to manufacture a comprehensive range of instruments that are required to keep the wheels of industry moving consistently. From the position of a net importer of a broad range of instruments two decades ago, India has emerged as a competent manufacturer and even exporter of quality instruments in the world economy. With incorporation of latest techniques of production, Indian instrumentation industry occupies a key position in the industrial infrastructure of the country. Today, the production of instruments in India has come to be acknowledged at par with standard of instruments manufactured even in the advanced countries.

The production profile of the industry covers a wide variety of instruments, such as, scientific, optical, surveying and mathematical instruments, industrial precision control indtruments, X-ray and electromedical instruments, medical and surgical equipment, photographic and photo-copying equipment, industrial jewels and water house service metres. Consistent diversification is the main characteristic of the Indian instrumentation industry. It has the unique capability of satisfying the requirements of quality conscious buyers at home as well as abroad. The high quality and price competitiveness of India-manufactured instruments have enabled the industry to bring increased foreign exchange earning from year to year.

The production turnover of the industry has been estimated at Rs. 450 million per annum. As per the change in the pattern of production of industrial machinery and many other allied areas, the instrumentation industry has also added some new instruments to its production range. In recent years, it has developed a number of sophisticated instruments that were appearing in India's import bill for the last so many years. Some of the typical examples of such instruments manufactured for the first time in India include electrostatic photo copying (Zerographic) machines, cardiograph recording (ECG) machines, paper and blood transfusion and infusion equipment.

In the organised sector, a number of categories of instruments registered significant progress in production during 1973, notwithstanding various bottlenecks at production level. For instance, output of scientific and surveying instruments increased to Rs. 43 million (1973) from Rs. 38 million (1972), medical and surgical instruments to Rs. 24.30 million from Rs. 20 million and X-ray and electromedical equipment to Rs. 35 million from Rs. 30 million. In the case of photographic and photocopying instruments, output of box cameras improved from 275,000 numbers (1972) to 380,000 numbers (1973) and that of photocopying machines and photo - screening machines improved from 350 numbers to 500 numbers. In respect of house service metres, production of poly phase metres rose from 302,000 numbers (1972) to 339,000 numbers while that of single phase meters declined from 1.53 million number to 1.05 million numbers. Sizeable output increase was noticed during 1973 in respect of electrical, measuring, integrating and recording instruments also; the production looked up to Rs. 43.50 million from the earlier level of Rs. 36 million. However in respect of industrial process control instruments, the output came down to Rs. 70.75 million (1973) from the last year's value of Rs. 81.20 million.

In 1973, there were 12 units engaged in the production of scientific and surveying equipment (installed capacity Rs. 54.50 million), 9 units in medical and surgical instruments (Rs. 37.50 million) and 6 units in X-ray electro-medical equipment (Rs. 45 million). In the category of photography and photocopying instruments, one unit with an installed capacity of 400,000 numbers was engaged in the production of box cameras and 3 units with a capacity of 1721 numbers were producing photocopying machines and photo-screening machines. In all, 15 units with a combined installed capacity of 1.63 million numbers were engaged in the production of single phase service metres while 9 units with a capacity of Rs. 150 million were turning out industrial process control instruments during the year. In the same year, an installed capacity of Rs. 55.50 million worth of electric, measuring, integrating and recording instruments was being shared by 11 units.

The Government of India follows a fairly liberal licensing policy for creating additional capacity in this line of manufacture. With growing use of the instruments in industrial process control, the instrumentation industry is endeavouring to diversify the range of instruments as also to improve the output every year. In the public sector, two projects have made a good headway in production field. These are M/s. Instrumentation Limited, Kota (Rajasthan) and M/s. National Instruments Limited, Calcutta.

M/s. Instrumentation Limited, Kota which was incorporated in 1964 improved its output to Rs. 51.65 million in 1972-73 from Rs. 43.80 million in the preceding year. While achieving progressive diversification of the range of instruments, the firm, in recent years, has even started supplying instrumentation systems abroad. The company, at present, is executing supply of instrumentation systems for 3 units of power plants to be established at Port Dikson in Malaysia. In addition, it has also secured an export contract from the same country for supply of boiler instrumentation and controls for a 30 MW unit to be established in that country. The value of the contract is Rs. 700,000. Similar export orders have also been received by the firm from Arab Republic of Egypt and Iraq for the supply of Throw-away thermocouple (developed by the company itself) and for glass furnance instrumentation respectively. The company has active plans for further expansion and diversification of production. Its production programme in the Fifth plan includes a scheme for introduction of unified system for up-dating the production and for manufacture of pollution control instruments.

The Kota company has planned to set up a mechanical instruments plant at Palghat in Kerala State to manufacture control valves and allied items. The unit is expected to commence its operation in April 1975 and to attain progressively a turnover of Rs. 55 million per annum.

One more instrumentation unit in the public sector, M/s. National Instruments Limited, Calcutta, is presently engaged in the manufacture of various types of surveying, meteorological, scientific and industrial instruments. The unit has achieved improved production turnover onwards 1971-72. During 1972-73, its total production was valued at Rs. 11.16 million. With a view to improve its economic viability, it has lately diversified its production range to include new instruments, such as, infra-red equipment and optical reading devices etc. The firm is also catering to the requirements of Defence. Today, its tands as a leading supplier of infra-red equipment for Defence Services. The company has active plans to maufacture cameras and passive type infra-devices during the Fifth Flan period.

The only one of its kind in India, M/s. Bharat Opthalmic Glass Limited, Durgapur, West Bengal is the sole manufacturing unit of opthalmic blanks which were being imported into the country till recently. Upto 1972, the company was a constituent unit of National Instruments Limited, Calcutta. The firm's production during 1972-73 was of the order of Rs. 1.90 million. This is expected to go up to Rs. 2.33 million in the following year.

In the field of industrial jewels, one unit with an annual capacity of Rs. 5 million is already in operation and another unit for the manufacture of bi-metal components with the same installed capacity is on stream.

The instruments industry was largely dependent upon the imported know-how and epuipment so far. However, taking into account the urgent need for development of indigenous know-how in the line, an institute for design of electrical measuring instruments was set up in Bombay. The main objectives of the institute are to make available to the instrument manufacturers technical know and related information to enable them to improve quality of instruments and increase productivity. The Institute is primarily engaged in Research and Development in the line in order to develop up-to-date indigenous designs and prototypes adaptable to Indian manufacturing conditions. It also provides testing, calibration, laboratory and workshop facilities to the industry. It also conducts training programmes in designing and manufacturing of electrical, measuring and process control instruments to support the industry in developing and manufacturing highly specialised electrical, measuring and process control instruments and their components.

While such is the progress in the production field, the industry is equally active in exports also. During 1972-73, the exports of scientific, medical, optical, measuring and controlling instruments shot up to Rs. 33.25 million from Rs. 16.50 million in 1971-72 and Rs. 14. 22 million in the year that preceded.

USSR, Hong Kong, Kenya, Singapore, USA, Federal Republic of Germany, Bulgaria, Poland, UK, Bangladesh, Nigeria, France, Sudan and Zambia were the leading importing destinations. ☐

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UPTREND IN TEXTILE MACHINERY EXPORTS

Textile machinery occupies a prominent position among a variety of industrial machines supplied overseas by India. The exports of such machinery and parts totalled Rs. 46.80 million in 1973-74 against Rs. 43.25 million in the preceding year. The major variety exported relates to spinning ring frames which was supplied mainly to Hong Kong. Processing machines (other than synthetic fibre), knitting machines, textile driving machines and a host of accessories of textile machinery were also active in export trade.

Contributing to the export effort in the line, M/s. National Machinery Manufacturers (Stadium House, 81-83, Veer Nariman Road, Bombay) have recently shipped textile machinery worth Rs. 4.60 million to South Korea. This is reported to be the largest single consignment of textile machinery ever exported from the country. Including this consignment, the company has already exported textile machinery valued at Rs. 20 million during the current year to the U.K., South Korea and Taiwan.

The textile machinery industry in India is presently manufacturing a complete range of spinning, weaving and processing machinery of high quality. Annual installed capacity is estimated at Rs. 500 million excluding capacity for spares and components. Letters of intent for an additional capacity of Rs. 321 million have been issued. Actual production of complete machinery in 1973 (upto November 1973) was of the order of Rs. 318 million compared to Rs. 306 million for the entire preceding year. Significantly, the increase in production is marked by a saving in the import bill as well. Such imports which amounted to Rs. 33.50 million in 1970-71, totalled Rs. 22 million and Rs. 27 million in 1971-72 and 1972-73, respectively.

The main raw materials required by the industry include pig iron, coke and steel. These are available indigenously. The imported raw materials are, in fact, limited to only about 5 per cent of the requirements.

ENCOURAGING TREND IN NON-TRADITIONAL EXPORTS

India's export trade in non-traditional items, such as, chemicals and chemical products as well as engineering goods has been registering a gradual uptrend in recent years. For instance, the country's overseas trade in chemicals improved to about Rs. 570 million in 1973-74 from Rs. 403.63 million in 1972-73 and Rs. 354.58 million in 1971-72. Similarly, the foreign exchange earning of the engineering sector rose to Rs. 1505 million in 1972-73 as compared to Rs. 1260.45 million in the preceding year. During the first eleven months of 1973-74, these exports were estimated at about Rs. 1490 million.

In tune with this trend, a Poona, firm, M/s. Dr. Beck and Co. (India) Ltd., have concluded two sizeable contracts with U.S S R. One of these relates to the supply of polyester synthetics worth Rs. 6.96 million while the second one pertains to supply of wire enamel to the value of Rs. 53.32 million. Both the orders are to be executed by October next year.

With the above orders, total exports of the Poona firm touch a high level of over Rs. 200 million. The firm is exporting its products, mainly wire enamels, to a number of countries including U.S.S.R., Ethiopia, Mauritius, Arab Republic of Egypt, Greece, Kuwait, Malaysia and U.S.A.

The firm's export for the year ending June, 1974 amounted to about Rs. 16 million. In the same year, their total sales turnover was of the order of Rs. 54 million compared to Rs. 42 million in the preceding year.

BOOST IN EXPORTS OF BICYCLES AND PARTS

Exports of bicycles and parts made in India rose sharply to Rs. 146.90 million in 1973-74 from Rs. 105.50 million in 1972-73, Rs. 80.40 million in 1971-72 and Rs. 69 million in 1970-71.

Of the total export realisation in 1973-74, bicycle parts accounted for the major part of the earning at Rs. 119.26 million while the share of complete bicycles and other cycles was limited to Rs. 26.74 million. In terms of quantity, 172,352 complete bicycles were supplied abroad. Iran, Nigeria and U.S.A. were the leading buyers.

In the range of bicycle accessories and parts exported during 1973-74, bicycle free-wheels constituted the major item of export dynamism. These fetched nearly Rs. 10.37 million from about 40 countries, Italy, Indonesia, Singapore and Thailand being the major customers. Bicycle chains with an earning of nearly Rs. 9.70 million from about the same number of countries were equally active in export trade. The major importing countries were Nigeria,

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France, U.S.A. and U.K. The foreign exchange earning of other accessories and parts was: rims Rs. 3.25 million, spokes Rs. 4.64 million, saddles Rs. 1.44 million, hubs Rs. 2 million and other parts Rs. 88 million.

Contributing to the export effort in the line, M/s. Vanaz Engineers Private Ltd., (396, Veer Savarkar Marg, Prabhadevi, Bombay) secured order in 1973 for supply of 20,000 caliper brake sets for sports bicycles from a quality conscious market of U.K. A repeat order from the same country for an equal number of these sets is in hand with the firm for the current year.

Besides caliper brakes for sports bicycles, other products handled by the firm include high pressure industrial valves for industrial and medicinal gases, liquefied petroleum gas pressure regulators (industrial and domestic types) and brass and aluminium forgings. They are exporting their products mainly to U.K. West Germany. Finland, Australia, East African countries, Sri Lanka and Malaysia.

In India, there are presently 14 units engaged in the manufacture of complete bicycles. The licensed capacity is placed at about 3.73 million numbers. Letters of intent have been issued for an additional capacity of 0.12 million numbers. Actual production of bicycles was of the order of 2.6 million numbers in 1973-74 as against 1.80 million numbers in 1972-73 and 2.08 million numbers in 1971-72. The organised sector of the industry accounts for about 80 per cent of the total bicycle production. Additionally, the small scale sector has over 300 units engaged in the assembling of bicycles and manufacturing bicycle parts and accessories. The capacity for complete bicycles in the small scale sector is 0.50 million numbers while the current production level is placed at 0.40 million numbers.

In regard to bicycle ancillaries and parts, the production in terms of value was Rs. 150 million in 1973 as against Rs. 142 million in the preceding year. A comprehensive range of products, such as, bicycle chains, freewheels, hubs, spokes, nipples, rims, mudguards, saddles and chain wheels are manufactured by the industry.

The principal materials used by the industry are cold rolled steel strips. ERW steel tubes, free cutting quality steel bars, forging quality steel bars, brazing pans, primary nickel and heat treatment salts. Except for nickel and minor quantites of non-ferrous metals for brazing, most of the raw materials are indigenous. However, cold rolled strip is in short supply.

EXPORT PERFORMANCE AND POTENTIAL

BASIC CHEMICALS EXPORT UP

India's exports of basic chemicals and other items coming under the purview of the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council, Bombay, indicated an encouraging trend during the first four months of 1974-75 (April-July 1974) according to the Council. The exports during the period are estimated to have earned foreign exchange at a value of Rs. 239 million registering a sizeable increase over the export value of Rs. 217 million and Rs. 115.65 million in the same periods of 1973-74 and 1972-73, respectively. This export performance even exceeded the prorata target set for the period at Rs. 183.50 million with a sharp margin of Rs. 55 million.

In the full year of 1973-74, the exports were estimated at Rs. 698 million as compared to Rs. 352 million in 1972-73. The export target for the year 1974-75 has been fixed at Rs. 550.50 million.

Commoditywise export break up during April-July, 1974 indicates that the group of dyes, intermediates, alcohols and coaltar chemicals registered an impressive export growth as compared to the export realisation during the corresponding period of 1973-74. The export value shot up to as much as Rs. 37 million from nearly Rs. 16.75 million (April-July 1973).

The group of inorganic, organic and agro-chemicals also improved its overseas offtake during the period by more than 100 per cent to fetch Rs. 49.15 million as compared to Rs. 24.45 million. Of this, inorganic chemicals accounted for the bulk at Rs. 34 million as against Rs. 20.25 million in the same period of 1973-74, while Organic chemicals export spurted to as much as Rs. 13.75 million from only Rs. 3.10 million and agro-chemicals to Rs. 1.35 million from Rs. 1.10 million.

Third in significance in terms of foreign exchange earning, the group of essential oils registered more than cent percent increase in exports during April-July 1974 at Rs. 22.90 million as compared to Rs. 10.75 million.

Apart from the above, a moderate increase was also registered in the exports of agarbattis and miscellaneous items during the period. In case of agarbattis, the exports looked up to Rs. 5 75 million from Rs. 5.10 million while in respect of miscellaneous items, the export value rose to Rs. 2.73 million from Rs. 1.57 million.

Amongst the groups that brought in reduced export earning during April-July 1974 was included the group of drugs, pharmaceuticals and fine chemicals–Rs. 93.45 million against Rs. 122.80 million. A similar trend was also noticed in respect of glycerine, soaps, detergents, cosmetics and toiletries — Rs. 9 million against Rs. 15.85 million. Crude drugs exports declined marginally to Rs. 19.20 million from Rs. 20.10 million.

Of the total foreign exchange earning during the complete year of 1973-74, (Rs. 698 million), the group of drugs, pharmaceuticals and fine chemicals accounted for Rs. 342.96 million while the group of dyes, intermediates, alcohols and coaltar chemicals netted Rs. 101.67 million; inorganic chemicals, organic chemicals and agro-chemicals) Rs. 84.70 million; glycerine, soaps, detergents, cosmetics and toiletries Rs. 35.67 million; agarbattis Rs. 17.95 million; essential oils nearly Rs. 52 million; crude drugs Rs. 58. 75 million and miscellaneous items Rs. 4.40 million.

IMPRESSIVE RISE IN SENNA LEAVE EXPORTS

India-produced senna leaves and pods have registered nearly four-fold increase in foreign exchange earning during 1973-74 over their export value in 1972-73. The exports rose to over Rs. 20 million from only Rs. 5.85 million in the preceding year. Quantum-wise, the overseas supplies rose to 4.25 million Kgs. from 3.10 million Kgs. This obviously reflects more unit value realisation during 1973-74.

About 36 countries bought senna leaves and pods from India during 1973-74. Federal Republic of Germany topped the list of buyers having imported 1.37 million Kgs. at a cost of Rs. 7.42 million. In terms of value, its purchases contributed more than one-third to the total foreign exchange earning of this product. Hungary constituted the next significant market which bought worth over Rs. 4.65 million (over 0.80 million Kgs.). Czechoslovakia which purchased 0.38 million Kgs. at a value of Rs. 1.68 million was the next best market, followed by USA at Rs. 1.50 million (0.36 million Kgs.) and Japan at Rs. 1.40 million (0.33 million Kgs). Among other buyers, France, Netherlands, UK, Italy, Belgium and Argentina were significant.

In 1972-73, over two dozen countries were the importers. Hungary with an intake valued at Rs. 1.85 million (0.94 million Kgs.) was the principal importer, followed by Czechoslovakia at Rs. 0 80 million, Federal Republic of Germany Rs. 0.75 million and France Rs. 0.38 million.

INCREASE IN EXPORTS OF MACHINES FOR SPECIAL INDUSTRIES

India's foreign trade in machines for special industries brought in sizeable foreign exchange during 1973-74 at Rs. 51.65 million as against only Rs. 18.60 million in 1972-73, registering an increase of 183 per cent.

A wide range of machinery broadly categorised as food processing machinery, printing and book-binding machinery, paper-mill and pulp-mill machinery for manufacture of paper articles, machinery for crushing, sorting and moulding of minerals and construction and mining machinery was supplied to overseas markets during the year.

Food processing machines constituted the most sought after machines abroad during 1973-74. These fetched foreign exchange at Rs. 43 million. Interestingly, this reflects nearly a four-fold increase as compared to the export value of only Rs. 11.75 million in the preceding year. The sharp overseas offtake of sugar manufacturing machinery by Malaysia, valued at as much as Rs. 24.77 million, was the principal reason for the boost in exports of food processing machinery during 1973-74. In the previous year, purchases of Malaysia of this machinery were of the order of only Rs. 7 million. Besides sugar mill machinery, other items of food processing machinery exported included floor mill machinery and parts and accessories; rice mill machinery and parts, machinery for bread making and bakery and confectionary manufacturing machinery. Senegal, Uganda, Nigeria, Bangladesh, USA, Kenya, Thailand and Arab Republic of Egypt were the principal markets.

Paper-mill and pulp-mill machinery which secured Rs. 0.90 million in 1972-73 brought in nearly Rs. 4 million in the following year. Paper and paper board machinery and parts, paper and paperboard cutting machines and machines for manufacture of articles of paper, pulp and paperboard and their accessories found their way to markets overseas during the year. Kenya, Korea Democratic Republic, China Republic, Sri Lanka and Afghanistan were the leading importing destinations.

Improving their overseas offtake manifold during the year under review, printing and book-binding machinery secured Rs. 2.60 million as against only Rs. 0 70 million in 1972-73. The comprehensive export range of machinery in this group included printing presses and parts, type founding and type setting machines, type casting machines, proof presses, book-binding machines and printing type machines. Kenya, Switzerland, UK and Malaysia were the leading buyers.

Mineral crushing, sorting and moulding machinery too contributed to the export endeavour of the machinery sector to the extent of Rs. 1.30 million during 1973-74. In fact, in the preceding year, the export earning was much more at Rs. 3.90 million. Concrete mixers, concrete equipment other than vibrators, stone and mineral crushing machinery etc. were imported by over 18 countries during the year amongst which Nepal, Dubai, Bangladesh, Iraq, Mauritius and Arab Republic of Egypt were significant.

Construction and mining machinery, such as, road rollers, rock drilling machines, mining machinery parts and those of petroleum and gas well drilling equipment and of excavation machinery also figured in exports. These were supplied to Bulgaria and Sweden.

INDIA PAVILION AT RECENT INTERNATIONAL TRADE FAIRS

The India Pavilion at the Plovdiv International Trade Fair in Bulgaria was one of the centres of attraction for the visitors, according to the information received here. Nearly 38 Indian firms had participated in this Fair and displayed engineering items, textile goods, coffee, cashew, cigarettes, sports goods, footwear, handloom fabrics and handicrafts.

The Fair was inaugurated on September 3, 1974 and continued till September 11. A large number of foreign buyers are reported to have visited the India Pavilion for trade negotiations.

In Berlin, the Trade Development Authority (TDA) organised India's participation in the 12th Overseas Import Fair, "Partners in Progress", which was held from August 29 to September 2, 1974. Representatives of importing firms from Belgium, Sweden, Australia, France, Italy and West Germany visited the India Pavilion. The total value of orders booked was Rs. 4.4 million and as many as 100 trade enquiries were registered. As a result of business negotiations, long-term collaboration in the field of leather goods is expected to materialise.

In the Zambia Trade Fair, where the India Pavilion was adjudged the best among the international pavilions, Indian participants were able to secure some substantial orders. These include orders for 15,000 bicycles and bicycle parts, supply of 100 tractors, firm order for 60 diesel engines with prospects for substantial additional orders and supply of sanitarywares and ceramic wall - tiles worth Rs. 3.5 million. India also received orders for water coolers, deep freezers, pharmaceutical items and diamond drilling - mining machinery.

Another important outcome of India's successful participation in the Zambia Fair is the interest shown by many Zambian organisations and firms to send their purchase missions to India. Four such missions have already left for India for establishing direct personal contact with Indian exporters and for placing orders on the spot.

Participation in this Fair has helped India forging new links in the commercial relations between Zambia and India.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

INDIA TO MANUFACTURE ELECTRIC TYPEWRITERS

India's first electric trypewriter is soon to be marketed by M/s. Hindustan Teleprinters Limited (HTL), Guindy, Madras, the sole state - owned enterprise engaged in manufacture of teleprinters in India. HTL is to commence manufacture of this sophisticated typewriter very soon along with many other varieties of electronic equipment pertaining to data transmission and computers.

The Madras firm has already received a letter of intent for the manufacture of 4000 electric typewriters. The new typewriter is estimated to cost about 50 per cent less than the imported one which is valued at Rs. 10,000 at present.

As a part of its diversification programme, HTL is also planning to set up an electronic switching equipment unit. Apart from this, the firm has successfully developed a number of other new items, such as, Modem for data transmission for use in computers and other equipment including high speed tape readers and tape punches. HTL is expected to commence production of these items shortly. The entire diversification programme of the firm is likely to cost about Rs. 30 million.

In the organised sector, there are at present 4 units engaged in the manufacture of typewriters with a combined installed capacity of 86,400 numbers (1973). The total production of typewriters in 1973 was estimated at 34,836 numbers. However, as compared to the production in the preceding year at 41,971 numbers, the output in 1973 registered decline owing to a number of constraints at production level. The production, in fact, registered constant increase from year to year till 1971—28,375 numbers in 1969, 38,525 numbers in 1970 and 43,360 numbers in 1971.

The units engaged in the manufacture of typewrites are M/s. Remington Rand of India Limited, Calcutta; M/s. Rayala Corporation Private Limited, Madras; M/s. Godrej and Boyce Manufacturing Machine Limited, Calcutta and M/s. J. K Business Machine Limited, Calcutta. Of these, the first two have foreign collaboration—with USA and Sweden respectively while the other two do not have any foreign collaboration. The industry is open for further licensing and foreign collaboration is permitted for portable and electric typewriters.

The bulk of the production is for standard typewriters. Recently, a fresh industrial licence has been granted for the manufacture of portable typewriters at a capacity of 15,000 numbers per year. Besides, letters of intent have been issued to the four units for setting up total capacity of 69,100 numbers per annum. Additionally, two units have been registered for a capacity of 19,500 numbers a year. When all these schemes materialise, the total projected capacity is expected to reach 190,000 numbers per annum. According to the present indications, the capacity likely to have materialised by 1973-74 would be

103,300 numbers. The Fourth Plan target for typewriter production was placed at 100,000 numbers per annum.

India has already entered into the export of typewriters. During 1972-73, India's export trade in complete typewriters totalled about Rs. 1.55 million which was higher than that of the preceding year at Rs. 0.83 million. Nepal, Malaysia and Bangladesh constituted the leading buyers during 1972-73 while Nepal and Malaysia were the principal importers during 1971-72. In terms of quantity, 2331 complete typewrites were supplied overseas during 1972-73. Typewriter parts were also exported during the year.

AREAS FOR FOREIGN COLLABORATION IN INDIA

The Government of India considers foreign collaboration proposals only in the fields of high priority and in areas where the import of foreign technology is considered necessary. In other areas, import of technology is considered on merits if substantial exports are guaranted over a period of 5 to 10 years and if there are reasonable prospects for such exports.

The major industries in which foreign collaboration may be permitted include oil and chemical industries, industrial machinery, electrical engineering industries, earth moving equipment, selected ferro-alloys, non-ferrous metals, glass industry and rayon and synthetic fibre industries.

Oil and Chemical industries cover fertilisers (other than single superphosphates), selected pesticides, off shore oil exploration, oil refining including the production of oil, special additives and chemicals required for the oil industry, petro-chemicals, thermoplastics, synthetic rubber, detergent alkalytes, certain drugs and pharmaceuticals and photographic and special gelatine.

The area of industrial machinery includes quite a comprehensive range of items—cylindrical, tapered, spherical and other special bearings (excluding ball bearings); certain items of textile machinery like combers, automatic pirn winding and warp winding machines, processing and finishing machinery, jute machinery (certain selected items), rayon machinery, specialised printing machinery (e.g. rotary printing presses, offset printing presses and composing machinery), and rubber processing machinery. Technical collaboration is also considered for the manufacture of seamless tubes, cast iron, cast steel and forged rolls, specialised items of chemical and pharmaceutical machinery, silicones, catalysts, commercial explosives, watches, standard and portable typewiters, electric typewriters, data processing machines, calculating and adding machines, precision measuring tools, machine tools and accessories (selected types), programme control equipment and high duty wharf and floating cranes of all types.

In the electrical engineering sector, the items include - electro-magnetic and time relays, railway electrical signalling, HRC fuses, germanium and silicon diodes, dry cells and train lighting cells, electronic instruments and selected electronic components, selected measuring instruments, electromedical, optical and dental instruments and equipment for medical profession, DC motors and controls, transistors and very high frequency electrical equipment, LT and HT circuit breakers and power cables above 11 KV.

In the earth moving equipment area are covered items, such as, crawlers, tractors, scrapers, excavators, blast hole drills, heavy duty dumpers and haulers, pay loaders, tractor shovels, tyre mounted cranes, power tillers, specialised automobile ancillaries, industrial gases (oxygen, nitrogen, hydrogen, carbon-dioxide and acetylene), mine safety/rescue appliances and gas testing apparatus for mines.

In the group of ferrro-alloys, a few industries like ferro-molybdenum, ferro-titanium, ferro-tungsten and ferro-vanadium are the lines considered suitable for foreign collaboration.

Among non-ferrous metals, copper, zinc, lead, iron ore including process for agglomeration of ore fines and consultancy engineering are the areas in which foreign collaboration can be permitted.

In respect of glass industry, polished plate glass, laboratory glassware and silica-ware are the only lines of manufacture where foreign collaboration may be allowed.

Apart from the above, there are certain other areas of manufacture in which only foreign technical collaboration may be permitted (and not foreign investment). Such areas include paper, pulp and allied industries, rubber goods industries including tyres and tubes, chemical industries, asbestos and carbon products and timber-based industries. Besides, in the significant field like electrical engineering industries, foreign technical proposals can be considered in respect of transformers above 1000 KVA, AC motors above 30 HP, fractional horse power motors, variable speed motors, power line carrier equipment, lightning arrestors, selected categories of insulation materials for electrical industries, flame proof lamp fittings, electric lamps (photo flash, pre-focus, infra-red, ultra-violet mercury vapour, telephone switch board), lamp components (lead in wire, filament and flourescent powder, controls of refrigerators and air-conditioners, specialised surgical equipment like blades, needles etc., AC motor starters for motors above 30 HP, hearing aid, crane control gear, power capacitors and CTS and PTS for measuring and protection.

In the metallurgical sector, SG Iron casting, alloy iron castings and non-ferrous semis (not produced in India presently) are the special lines where foreign technical collaboration is permitted.

A wide range of industries in the industrial machinery sector are also covered under foreign technical collaboration. These include coal and ash handling plants, printing machinery, gears and gear boxes, chemical and fertilizer plants, metallurgical equipment including foundry equipment (plants and machinery for such items as LD convertors, rolling mills, special features of blast furnace for giving improved productivity and cokeoven by-product plants), oxygen and acetylene plant), ceramic machinery, pulp and paper-mill machinery, food processing machinery, accelerated freeze drying plant, mineral beneficiation plants, specialised equipment for air-conditioning and refrigeration and air control equipment, such as, centrifugal compressors, low temperature freezers, transport refrigeration equipment, electrostatic precipitations, silos, etc., mining machinery (hydraulic props and electric drills).

In cutting tools, only selected cutting tools come under the purview of foreign technical collaboration.

Besides the aforementioned industries, requests for foreign technical collaboration may also be considered in respect of a number of miscellaneous industries including improved types of agricultural implements and machinery, pesticides application equipment (special types), time pieces (non-conventional), industrial sewing machines, gas appliances, hair-springs the other types of delicate and complicated springs, industrial precision roller chains bigger than 5/8" pitch, simplex, duplex and triplex, bush chains, special roller chains for mechanical handling, bush slot bank, trolley conveyor chains, hollow bearing pen type chains, special bicycle components, (multispeed hubs, with trigger and twist control), high pressure pipe fittings of specialised type other than malleable iron fittings, ship chains and alloy steel chains other than ordinery mild steel, welded link chains, sophisticated types of valves and cocks, fishing hooks, superior quality sanitary fittings, thermo-setting moulding materials, fatty alcohols, electroplating chemicals, welding fluxes, foundry chemicals, dye-stuffs and intermediates, iron ore pelletization including production of sinter feed, alumina, safety razor blades and safety razors, alloy and special steels including cold rolled grain oriented sheets, special alloy steel, tin-free double reduced or single side-plated tin plates, coloured galvanised sheets, plastic coated sheets, other special items of steel, wire thinner than 19g and special wire, chemical porcelain, welding electrodes (special types), duplicators (special types), machine screws (special types) and steel mill cranes (class IV duty).

HINDUSTAN SHIPYARD—PRODUCTION PROGRESS

India's shipping traget for the Fifth Five Year Plan has been fixed at 8.6 million GRT. Of this, the share of cargo liners has been placed at 2.06 million GRT.

M/s. Hindustan Shipyard, Visakhapatnam, the public sector undertaking engaged primarily in building ships of high DWT, general cargo ships and small vessels and who are also pioneer cargo liner builders in India, have to play a significant role in fulfilling the target set for cargo liners during the Fifth Plan. It is claimed that, the Shipyard today carries about 20 per cent of the total overseas trade of India.

The Shipyard has to its credit increased production turnover from year to year. For the year 1973-74, the production value of the Shipyard is estimated to be of the order of Rs. 157.50 million as against Rs. 134.20 million in the preceding year. It rose to the levels mentioned above from Rs. 70 million in 1969-70. Similarly, substantial progress has been achieved by the Shipyard in the field of ship-repairs and dry docking operations. From only Rs. 0.4 million in 1969-70, the turnover in the field has gone up to as much as Rs. 10.30 million. In the following year, the same is expected to reach an all time high level of Rs. 16 million. These achievements amply prove the pace of alround progress achieved by the Shipyard in the ship-building sector of Indian economy. The annual output of the Shipyard is to be more than doubled. To this end, a sizeble development programme of the Shipyard has been undertaken. The yard has recently launched 'Jag Doot' the biggest vessel so far built in India. Jag Doot is automated vessel - first of its kind to be built at the Shipyard. It is also designed to operate with unmanned engine room. Its maximum speed will be 16 knots when fully loaded. The 21,800 tonnes Jag Doot is the sixteenth vessel to be launched from the Shipyard. Besides this, the Shipyard is also to build three other ships of the same tonnage for a private Indian shipping firm. The keel of Jag Doot was laid in September last year.

The Government of India proposes to set up a Central Marine and Research Organisation. This would help the shipyards in India to build vessels of required standards and specifications at cost which would be competetive in terms of standards.

Today, the Shipyard's order book is full with assignments to build 24 ships. This is sufficient to keep the Shipyard busy until the end of the Fifth Five Year Plan. During 1972-73, the Shipyard delivered two vessels and the third one at the beginning of 1973-74. Towards the end of the first quarter of 1973-74, the Shipyard laid the keel for a 21,800 tonne DWT multipurpose bulk carrier cum cargo liner. This is the fourth biggest ship and the third of four ships ordered by and being built for M/s. Great Eastern Shipping Company Limited, Bombay. The Shipyard has active plans to build bigger ships of 60,000 and 80,000 DWT. Till the end of 1972-73, the shipyard contributed a net saving of about Rs. 300 million in foreign exchange.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

NEUTRAL TINTED GLASS FOR SNOW-GOGGLES

A neutral tinted ultraviolet absorbing glass filter suitable for making snow-goggles has been developed by the Central Glass and Ceramic Research Institute (CGCRI), Calcutta. The glass filter cuts off ultravoilet radiation, reduces the transmission of visible light almost uniformly at all wavelengths and also protects the eye against infra-red radiation. The largest users of snow-goggles being the defence personnel, the demand for this glass is of strategic importance. At present, the entire requirement of this glass is imported.

The laboratory scale work carried out at CGCRI was tried on a commercial scale in a one-tonne pot using a gas-fired regenerative furnace. Samples of glass were tested and were found to conform to all technical requirements.

DECOLORIZING SYNTHETIC TANNING MATERIALS

Manufacturers of synthetic tanning materials can improve the quality of their product by adopting the latest technique for bleaching, developed by the Central Leather Research Institute (CLRI), Madras. The Syntans, heated for an hour with a mixture of chemicals (which are easily available), give the bleached product.

This bleaching process improves the quality of the product and in turn the tanned leather, giving them light pastel shades. The bleaching is very quick but at the same time it does not change the characteristics and properties of the product on ageing. The process is not only useful for tanning materials of phenolic and naphthalene type but also could be effectively used in the bleaching of vegetable tanning extracts.

The process has been developed on a laboratory scale on 2 to 2.5 kg batches with reproducible results. The process does not need any capital investment, as this is only an intermediate step in the manufacture of Syntans and, therefore, would be of interest of manufacturers of Syntans. The introduction of bleaching operation during manufacture of Syntans would increase the cost of production of Syntans by Rs. 75 to 100 per tonne. But this would be compensated by enhancement of the quality and utility of the product.

Further particulars in the connection may be obtained from : The Managing Director, National Research Development Corporation of India, 61 Ring Road, Lajpat Nagar III, New Delhi 110024.

INDO-YUGOSLAV TRADE AND ECONOMIC COLLABORATION

Ever since India became a free nation, she has been having the closest relations with Yugoslavia in the political as well as trade and economic fields. The first trade agreement between the two countries was concluded as far back as 1953. However, an attempt to rationalise trade exchanges and set them on a pattern that would give maximum mutual benefit was made in 1959 when a bilateral trading arrangement between India and Yugoslavia on rupee payment was introduced.

The trade and economic relations between India and Yugoslavia have been growing fast. The Tripartite Agreement for Trade Expansion and Economic Cooperation was concluded in December 1967 between India, Yugoslavia, and Arab Republic of Egypt. It came into effect from 1st April, 1968 and brought the two countries even much closer and helped in the expansion of trade and economic relations between them. The agreement which was valid initially for five years has since been extended upto March 31,1978. It was conceived as a modest but unique effort of developing countries to strengthen mutal economic cooperation, to increase trade exchanges among the participating states and to contribute to the development of international trade. The main features of the agreement are that it is open for accession by any developing country of the group of "77" and it contains a "Common List" of products with respect to which each participating state has agreed to accord tariff concessions when imported from the other two countries.

The establishment of Indo-Yugoslav Joint Committee and the setting up of Sub-Committees for industrial cooperation and economic cooperation in third countries is a healthy shot in the arm of trade and economic cooperation between the two countries. The meetings of Indo-Yugoslav Joint Committee have proved very useful and exchange of trade and economic delegations have helped in the identification of products for export to and import from Yugoslavia. An awareness of the range of products and potential which could be exported/imported has been created.

During the validity of rupee payment arrangement for over a decade, Indo-Yugoslav trade registered a sizeable growth reaching new heights in 1970-71. However, a decline set in for 1971-72. After examining all aspects of trade, a bold decision was taken to snap rupee payment arrangement and to have trade in free foreign exchange. This appears to be paying rich dividends. The trade in 1973-74 is showing appreciable increase.

The table below sums up India's trade with Yugoslavia during the last few year.

(Rs. in million)

Year	Imports from Yugoslavia	Exports to Yugoslavia
1969-70	61.80	339.79
1970-71	75.10	393.57
1971-72	54.40	243.73
1972-73	67.90	124.50
1972-73 (April-December)	47.34	95.02
1973-74 (April-December)	60.72	175.13

It may be observed that the trade during April-December 1974 increased by about 30 per cent as compared to the last year. This, of course, has been the result of various steps taken by the two counries to enhance trade.

India's major exports to Yugoslavia are tanned and semi-tanned hides and skins, rubber manufactures including tyres and tubes, jute products, iron ore, tea, spices including black pepper, cotton waste, HPS groundnuts, jeeps and trucks, pig iron, wire ropes (steel) etc. Major imports on the other hand consist of crawler tractors, components and spares thereof. capital goods, chemicals, high pressure gas cylinders for oxygen and acetylene, paper (industrial), iron and steel bars and rods and plastic materials, drugs and pharmaceuticals, etc. India's non traditional items constitute about 27 per cent of her exports. It may be mentioned that certain engineering items, such as, automobile ancillaries, tractor components, bicycle components, machine tools, small and cutting tools, chemical/pharmaceutical items like senna alkaloids, emetine hydrochloride, quinine salts and other products, such as auto tyres and tubes, marine paints etc. have been identified as promising items of Indian exports to Yugoslavia.

In the last decade or so both the Yugoslav and Indian economies have witnessed rapid transformation. The Yugoslav economy has grown faster and has emerged not only as a leading industrial nation but also as one of the top tanking societies of the modern world. India too has attained a stature of a promient industrial economy. The Indian economy has improved its tempo of industrialisation over the years of planning and is now poised for further development. Being the largest country that has undertaken the task of socio-economic development under fully democratic conditions, the country is striving to raise the standards of living as also to usher in a socialistic pattern of society. Horizontal and vertical development of the industrial sector has taken the economy towards self-sufficiency in many sectors. The generation of electric power has increased manifold and extensive exploration as well as refining of oil resources has been undertaken. Transport facilities in terms of railway freight carrying capacity, length of surface roads and number of commercial vehicles have been more than doubled. Shipping tonnage has also increased and aircraft building programmes are being accelerated. Facilities for communication are fast developing. India is putting atomic energy to use for diverse peaceful purposes, such as, in medicine, industry, agriculture, biology and research. Basic and heavy industries including steel, heavy engineering and electricals, heavy chemicals and petro-chemicals have been firmly established. The progress of basic industrial production is being complemented by increased output of traditional industries, such as, cotton, silk, jute, tea, coffee, coir, spices, cashew, oils, handicrafts, leather manufactures and marine products. In keeping with the changing world demand, new end-uses are being discovered and new product variations are explored from the traditional lines of manufacture. Today the Indian economy is able to manufacture products of diverse description ranging from the smallest consumer items to gigantic and sophisticated machinery and equipment.

The economic transformation that is being witnessed in India has helped the cause of import substitution and export production. There has, in fact, been a significant resurgence in the export sector recently. The recent trend of improvement in her export trade in terms of quality, price competitiveness, technical perfection and progressive salesmanship is visible in her having secured global contracts against tenders for complicated items, such as, railway wagons, bridges, transmission line towers, power station equipment, industrial machinery, automobile equipment and the like. The Indian industry has also entered into joint ventures in various countries. Indian ability to undertake turnkey projects and to export consultancy services is now well recognised is the world economy.

In the context of development plans of India and Yugoslavia, nearly 15 proposals between the enterprises of the two countries have been approved for collaboration in fields, such as, industrial floor milling machines, electric motors, water meters, carbon resistors, styrofiles capacitors, drilling machines, varnier callipers, mining and washing of china clay, hydraulic units and frames for tipping and dumping equipment; sers, vaccines and toxeods, diesel engines, pelefes phosphatic fertilizer, electronic instruments and crawler tractors etc. Both India and Yugoslavia feel that there is a good scope for joint cooperation for them in third countries. Both have agreed to encourage the private and public sectors to exchange even technical services in addition to establishment of joint ventures/joint marketing/joint consideration of projects as well as utilisation of each other's products in projects in third countries. The following fields appear to have possibilities for joint participation in the third countries.

(i) Power generation/transmission and distribution;

(ii) building petroleum refineries, fertilizer and chemical plants, general purpose machine tools, textiles mills;

(iii) manufacture of plastic films, capacitors, electrolytic capacitors, ceramic capacitors, silver mica capacitors and ferrites etc.

(iv) joint pre-investment feasibility studies and project reports in third countries for steel rolling mills and light engineering facilities for production, inter-alia of bicycles, sewing machines, light general purpose tools, railway wagons assembly and consumer durables. Joint participation by India and Yugoslavia is possible in supply of necessary special equipment components and raw materials and technical and other services to third countries on a mutually agreed basis. There is considerable scope for complimentarity in supply of equipment and expertise between India and Yugoslavia.

The Sub-Committees which have been set up for industrial cooperation and cooperation in third countries are exploring the possibilities for industrial cooperation and also examining the various proposals made from time to time. The fields of collaboration in which Indian entrepreneurs are interested in collaboration projects in Yugoslavia include cement plant, asbestos cement plant, textile machinery, industrial gears and motor gears, etc. There are also possibilities of joint cooperation in manufacture of heavy fabrication for hydro turbine generators in Yugoslavia. Yugoslavs are interested in collaboration projects in steel, power, shipyards and shipbuilding. There has been excellent cooperation between the two countries in the field of shipping. Yugoslavia has built several ships for India. Only recently, two ships viz. 'Maulana Abul Kalam Azad' and 'Dr. Rajendra Prasad' have been delivered to India.

A significant breakthrough is a joint collaboration beetween M/s. Otto of F.R.G. and Engineers India Projects Ltd. for constructing a coke oven and by-product plant in Yugoslavia. M/s. Engineers India will supply machinery and parts worth Rs. 57 million.

Happily, there is an evidence of increased realisation both in India and Yugoslavia of a desirability for diversifying and improving collaboration relationship for mutual benefit. Undoubtedly there appears to be favourable conditions for further growth and diversification of trade and economic relations between the two countries in the years to come. A new era in Indo-Yugoslav friendship has thus begun. A sincere appreciation of each other's problems and potentials is being concretised towards closer integration of two societies. ☐

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INDIAN VEHICLES TO UGANDA

In tune with the growing popularity of Indian road motor vehicles in foreign countries, M/s. Tata Export Ltd. (Jeevan Tara Building, Parliament Street, New Delhi) have recently concluded a contract with Uganda for supply of 1096 complete vehicles valued at Rs. 90 million.

Under the contract, the Indian firm will receive twenty per cent of the payment in advance and the balance within 6 months of the shipment covered by a confirmed Letter of Credit.

Besides Uganda, road motor vehicles of Tata Exports have recently been sought in a number of other countries including Arab Republic of Egypt, Iraq and Mauritius.

The commodities handled by the firm include not only Tata Group products but also those of about other hundred reputed manufacturers. In addition to automobiles, the export profile of the company includes a wide range of products, such as, steel and industrial products, power and transmission equipment, construction equipment, textile and garments, and even consumer commodities like soaps and detergents.

Total foreign exchange earning of the firm amounted to Rs. 2.40 million in 1973-74 as against Rs. 2.10 million in the preceding year. Its cumulative foreign exchange earning since its inception as an export house more than a decade back, amounts to Rs. 1200 million.

India's foreign exchange earning of road motor vehicles in 1973-74 amounted to Rs. 150.25 million. Of this, motor vehicle bodies, chassis, frames and accessories alone brought in nearly Rs. 83.70 million. Lorries and trucks in assembled form or otherwise constituted the next best area of sizeable export earning. These fetched Rs. 20.10 million. Buses (assembled or otherwise) were more or less equally active in the export field. These earned about Rs. 19.20 million. Besides these significant groups, the export value of other categories in the line was : passenger motor cars Rs. 2 million; special purposes lorries, trucks and vans Rs. 3.80 million; road tractors and tractor trailor combination Rs. 2 million and motor cycles, motorised cycles and parts Rs. 3.20 million.

During the last two decades, India's automobile industry has developed technical expertise and know-how to manufacture a variety of commercial vehicles catering to rapidly changing requirements of users at home and abroad. The broad range of manufacture includes trucks, buses, lorries, motor cars, jeeps, scooters, tractors and almost a complete range of ancillaries and parts. Production of the industry is also rising year after year. The output of commercial vehicles rose to about 42,400 numbers in 1973 from 37,460 numbers in 1972 while production of jeeps improved to 13,070 numbers from 12,590 numbers. Similarly, the output of scooters, motor cycles and mopeds was up at 150,903 numbers in 1973 compared to 133,500 numbers in the preceding year.

CABLES IN EXPORT TRADE

The export value of India - made equipment for distributing electricity, including insulated wire cables and electrical insulating equipment totalled nearly Rs 61.30 million in 1973-74. The share of insulated wire cables alone in the total export realisation of the group was Rs. 57.93 million while the category of electrical insulating equipment contributed about Rs. 3.37 million. USSR, Singapore, Qatar, Hong Kong, Iran, Abu Dhabi and Dubai were among the major buying countries for insulated wire cables while overseas supplies of the insulating equipment were directed, among others, to Singapore, Iraq, Ghana, Kuwait and Sri Lanka.

Contributing to the export effort in the line, one of the manufacturers M/s. Indian Cables Corporation Ltd. (INCAB), (9, Hare Street, Calcutta) have succeeded in stepping up the their exports to Rs. 17.80 million in 1973-74 from Rs. 16.60 million in the preceding year. The performance is encouraging viewed in the background that the total gross sales turnover of the company during the year suffered a marginal decline at about Rs. 254 miilion in comparison to record sales of Rs. 257 million in 1972-73. Creditably during 1973-74, the company obtained export orders for the first time from Poland and Hong Kong. Its export trade for the current year is reported to be running at an even better rate with orders emanating from Kuwait, Hong Kong, Sarawak and USSR.

The production profile of the Calcutta firm (INCAB) includes PVC power cables for transmission and distribution, and heat resisting PVC power cables.

Yet one more manufacturer, M/s. Omega Cables Ltd. (Bkhgaria Building, Moores Road, Madras), has recently contributed, though in a limited way, to the export effort in the line. The firm has secured an order from M/s. Al Haythem Trading Contracting Company of Muscat for 25 Kms. of 'Dog' ACSR conductors valued at Rs. 133,300.

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The range of products manufactured by the Madras firm includes PVC and polyethene insulated house wiring cables, armoured and unarmoured cables with copper and aluminium conductors and copper flexibles, and ACSR and AA conductors.

In India, there are, at present, 11 units engaged in the manufacture of power cables (PVC/PILC and cross linked polyethylene) with an installed capacity of 23,500 Kms per annum. The capacity covered by industrial licenses is 27,359 Kms. Besides, letters of intent have been issued for an additional capacity of 5950 Kms. Actual production was of the order of 17,100 Kms. The bulk of production consists of PVC power cables. PILC power cable production is intended mostly for export purposes.

The manufacture of power cables with copper conductors is officially not encouraged unless intended for export. The power cables produced for domestic use are to be based on aluminium conductors.

As regards PVC/VIR cables, the industry has an installed capacity of 1281 million core metres spread over 27 units. The licensed capacity is of the order of 1338 million core metres. Letters of intent have been issued for an additional capacity of 128 million core metres. Production in 1973 was of the order of 694 core metres. Under the current industrial licensing policy, house wiring cables are reserved for the small scale sector. Proposals for foreign collaboration for the manufacture of specialised types of cables could be considered on merits.

ELECTRIC LAMPS ON EXPORT STREAM

India's exports of electric lamps and parts improved to Rs 4 46 million in 1973-74 as against Rs. 3.80 million in the preceding year.

Of the varied types of lamps exported during 1973-74, flourescent tube lamps constituted the main item of export dynamism with an earning of as much as Rs. 1.84 million. Among nineteen countries which bought these lamps from India, Hong Kong, Bangladesh, Iran and Nigeria were prominent in order of the value of their intake.

Besides these lamps, mercury vapour lamps and other electric discharge lamps, torch bulbs and other miniature bulbs, automobile bulbs, gas-filled electric bulbs, studio lamps and other incandescent glow lamps and arc lamps were also included in overseas supplies. Additionally, flourescent tube parts and other electric lamp parts were also active in export trade. These secured about Rs. 1.95 million in foreign exchange, Abu Dhabi, Dubai, Korea, Kuwait, Muscat and Nigeria were the leading buyers for flourescent tube lamp parts while other electric lamp parts were sought mainly by Singapore and Mauritius.

A Calcutta firm, M/s. Mazda Lamp Company Ltd., has recently achieved a break-through in lamp exports by securing substantial orders for supply of "Mazda" brand lamps to West Asia. The company has also secured another export order for flourescent tubes from the Far East. The firm is reported to be negotiating for further orders and is likely to achieve a target of 33 per cent of the country's total lamps and tubes exports estimated for 1974-75. The performance of the firm is significant considering that it was set up only two years back.

The production of GLS lamps in India improved to 140 million numbers in 1973 from about 128 million numbers in 1972. Currently, there are 12 units in production in the organised sector with an installed capacity of 140 million numbers. Besides, there are a few units in the small-scale sector producing GLS lamps of lower wattage. Specialised lamps, such as, mercury vapour lamps are being manufactured by 5 firms having total installed capacity of 0.30 million numbers per annum.

Production of flourescent tubes in 1973 and 1972 was of the order of 10.2 million numbers and 12 35 million numbers while the output of miniature lamps amounted to 33 million numbers and 41 million numbers in these years. In both these years, there were 9 units engaged in the production of flourescent tubes and 7 units producing miniature lamps.

The import of GLS lamps is banned. Indigenous technical know-how is available for the manufacture of conventional lamps. Proposals for foreign collaboration for the production of specialised lamps like Halogen lamps and shadowless lamps could, however, be considered on merits. Miniature lamps like torch light bulbs, radio dial bulbs etc. are reserved, exclusively for small scale sector.

Currently, a substantial portion of tungsten filament, the main raw material required for manufacture of flourescent tubes is procured through import. A few schemes for the manufacture of this item have been licensed. This is expected to substantially reduce imports of this item in the near future. M/s. Hindustan Machine Tools have been licensed to produce basic lamp making equipment, popularly known as lamp chairs. Consequently, there would be no need for import of capital equipment for the creation of additional capacity.

EXPORT PERFORMANCE AND POTENTIAL

TRADE AND INDUSTRIAL COOPERATION BETWEEN INDIA AND POLAND

India and Poland have been working closely together not only in the unending quest for peace but in industrial, economic and commercial fields as well. They share a common outlook in industrial and trade matters. Trade between India and Poland has increased manifold with the signing of the first Indo-Polish Trade and Payments Agreement in January, 1956 providing for payments for commercial and non-commercial transactions in Indian rupees. This agreement has been extended from time to time. The current agreement which was valid upto December, 1973 has been extended for a further period of one year or till a new agreement is signed. The trade plan for 1974 envisages a trade turnover of $ 267 million approximately. The major items of India's exports to Poland are de-oiled groundnut cakes and other cakes, tea, iron ore, cotton textiles (mill-made), tanned and semi-tanned hides and skins, jute goods including jute bags and jute cloth, coffee, rayon and synthetic fabrics, iron and steel castings and forgings and electrical appliances for domestic and commercial use and certain consumer articles. Major items of Indian imports from Poland consist of urea (fertilizer grade), rolled steel and steel products, sulphur, mining machinery and equipment, ship equipment and organic and inorganic chemicals, pharmaceuticals, drugs, intermediates and dye intermediates.

The hard core of Indo-Polish trade is the import of fertilizers, steel and sulphur and export of de-oiled groundnut cakes and other cakes, iron ore, tanned and semi-tanned hides and skins and textiles. The share of non-traditional items in India's exports has gone up since 1972 and it comes to about 25 per cent of India's total exports, while the Polish exports of conventional equipment and machinery are declining. In recent years, Poland has emerged as an important supplier of ships.

With the setting up of Indo-Polish Commission for Economic, Trade, Technical and Scientific Cooperation, a healthy shot has been given in the existing friendly relations between the two countries. With the much needed diversification being gradually induced in a large percentage in the both-way trade exchanges, the prospects for Indo-Polish trade in the coming years are indeed promising. This diversification which reflects the changing pattern for Indian economy from a producer of primary agricultural products to manufactured and semi-manufactured products, affords the best chance of strengthening and developing trade relations in the years to come. It is encouraging to think that the Polish authorities share India's views in this matter.

India is fast growing into a modern industrial nation. In a period of 27 years, it has made rapid progress in all fields of economic endeavour-agriculture, irrigation, mining, electricity, industry and development of technology. In industrial development, the country has attained enormous expansion and diversification in practically all major fields-iron and steel, metal industries, engineering industries, machine building, chemicals and fertilizers, plastics, oil refining, petrochemicals, textiles, agriculture-based products, processed foods, marine products, etc. It has also capacity, skills and expertise to manufacture a wide range of products from small consumer articles to the most modern machinery and equipment.

India is today expanding the areas of higher technology and research. Sophistication is developing in various fields, such as, electronics, computerisation and atomic energy. Qualitatively, a continuous effort is being made to maintain the highest international standards of Indian products.

India places high value on maintaining good trading relations with Poland. The items for export from India are competitive in price and are of high standards. There undoubtedly exist growing opportunities for industrial collaboration between the two countries. An atmosphere of mutual confidence and partnership between India and Poland has already been built up with the setting up of various projects with credits from Poland. The Polish credits are being used for power generation, development of coal mines and washeries and cellular concrete plants. Total loans/credits sanctioned amount to Rs. 381.60 million. India utilised Rs. 342.72 million upto 31st March 1974.

All the credits carry interest at 2½ per cent per annum. The first two credits are repayable over a period of 8 years and the third one over a period of twelve years. The repayment towards the principal begins one year after the date of invoice in the case of first and third credits and in respect of second credit 3 years after the date of final invoice and other stipulated documents concerning the last shipment of machinery and equipment for putting the respective plants into operation. Both the payment of interest and repayment of principal are made in rupees to be utilised by the Polish authorities for the purchase of Indian goods according to the provisions of the Indo-Polish Trade Agreement.

The atmosphere of mutual confidence between India and Poland is now leading to more fruitful collaboration in trade, industry, finance and technolygy.

SEWING MACHINES EXPORT MAINTAINED

The export earnings from overseas supply of Indian sewing machines were maintained during 1973-74 at the preceding year's level despite a number of bottlenecks faced by the sewing machine industry in the field of production. The exports were of the the order of Rs. 5 million as against Rs. 5.10 million in 1972-73.

During 1973-74, complete sewing machines with stand earned Rs. 1.40 million while those without stand or household tables brought in over Rs. 1.85 million. Thus, the total export earning of complete sewing machines, (with and without stand/table) amounted to Rs. 3.25 million which was marginally less as compared to their export value in 1972-73 at Rs. 3.45 million. In terms of quantity in all 30,846 complete sewing machines were sold abroad which included 10, 229 sewing machines with stand or table and 20,617 machines without stand.

Iran was the largest buyer amongst 14 overseas markets which bought sewing machines with stand/table. It purchased 4500 machines at a cost of Rs. 0.47 million, followed by Bangladesh at Rs. 0.37 million (1530 numbers), Afghanistan Rs. 0.32 million (2516 numbers) and Ghana Rs. 0.12 million (5000 numbers).

For complete machines without stand/table, Iran, again topped the list of over a dozen countries, having purchased 4620 numbers at Rs. 0.39 million. U.K., closely followed Iran having bought worth Rs. 0.37 million (4200 numbers). Indonesia was the next important market at Rs. 0.31 million (3800 numbers), followed by Sri Lanka at Rs. 0.18 million, Afghanistan Rs. 0.16 million and USA. Rs. 0.14 million.

Besides complete machines with or without stand/table, parts and accessories including needles secured foreign exchange at Rs. 1.75 million. Indonesia, Japan, Yugoslavia, Sri Lanka, Afghanistan, Turkey, USA, and Arab Republic of Egypt were significant markets.

Indian sewing machine industry has been achieving significant progress in output year after year. Barring the year 1973-74, during which the production came down to 0.26 million numbers from the preceding year's 0.34 million numbers and 0.31 million numbers in 1971-72, the annual output has been indicating improved turnover. During 1973-74, there were 5 units engaged in the manufacture of sewing machines in the organised sector with an installed capacity of 0.53 million numbers. The production in the organised sector during the year indicated only 50 per cent capacity utilisation mainly becuase of substantial production in the decentralised small scale sector at low cost and owing to growing number of industrial disputes in the organised sector.

By the end of Fifth Five Year Plan (1978-79) production and capacity requirements have been estimated at 0.67 million numbers and 0.73 million numbers per annum. These estimates have been concluded taking into account the domestic and overseas demands of sewing machines during the year and onwards. The gap between the existing capacity and actual production in respect of industrial sewing machines, exists owing to constantly growing requirements of ready made garments and leather goods industries at home and abroad. Similarly, an additional capacity is required to be created in respect of fully automatic zig zag machines which have large export markets abroad.

Indian Government encourages production of domestic sewing machines in the small scale sector. However, the proposals for additional capacities in the organised sector may also be considered provided the new units guarantee import substitution and export promotion. Foreign technical collaboration can be allowed for the manufacture of industrial sewing machines only. Some special types of sewing machines are also manufactured solely for export purposes.

The import content in the manufacture of sewing machines is negligible as most of the raw materials, such as, foundry grade pig iron, hot and cold rolled steel sheets/strips, mild steel plate and bars, free cutting steel bars and plating chemicals are available indigenously. The raw materials to be imported include primary nickel and tool alloy steel.

BUCKLES AND EYELETS FOR FOOTWEAR IN EXPORTS

India's non-traditional export items include even buckles and eyelets for footwear. During 1973-74, these secured foreign exchange at a value of nearly Rs. 1.60 million which was higher than the exports in 1972-73 at Rs. 1.10 million. Though limited at present, there exists a considerable scope to improve these exports in the years to come.

Over three dozen countries imported footwear buckles and eyelets during the year under review as compared to about 30 countries in the preceding year. UK was the leading buyer in 1973-74, followed by Peru, Federal Republic of Germany, Kenya, Sudan, Thailand, Spain, Saudi Arabia, Kuwait and Iraq.

In 1972-73, Federal Republic of Germany constituted the principal importer, followed by Kenya, Zambia, Tanzania Republic, Sudan, Kuwait, Peru and Japan.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

TREND IN TOBACCO PRODUCTION IN INDIA

India is the second largest producer of Leaf tobacco in the Asian region, next only to the People's Republic of China. It also ranks second in the production of Flue-cured tobacco, the first being China again. In the production of Burley tobacco, it however, stands third, after Republic of Korea and Japan. Thus, India enjoys reputation as a significant tobacco producing country in the Asian region.

During 1973, Asia's total production of Leaf tobacco was estimated at 4840 million lbs. In this India's share was of the order of 801.60 million lbs, nearly 16 percent of the total production of the region. In the same year, Asia's production of Flue-cured tobacco was 2228.50 million lbs in which India's contribution amounted to 245 million lbs. In the total output of Burley tobacco of the region during the year at 129.20 million lbs, India accounted for 5 million lbs.

The output trend in India in regard to these varieties of tobacco during 1973 was, however, not much encouraging when compared with the output performance in 1972. For instance, the production of Leaf tobacco at 923.50 million lbs in 1972 was much more than that of 1973 (801.60 million lbs). The output in 1973, however, registered an increase over the average production during the years 1967-71 at 785.76 million lbs. Similarly, the output of Flue-cured tobacco also registered considerable decline during 1973 when compared with the production in the preceding year at 307.32 million lbs. Despite this fact, it recorded increase over the average production of nearly 212 million lbs during 1967-71. The output performance in respect of Burley variety in 1973 was maintained at the preceding year's level. The average production during 1967-71 was 5.6 million lbs.

The fall in production of these varieties during 1973 is mainly attributed to the reduction in the area under cultivation The area under Leaf tobacco, for instance, was reduced to 1.07 million acres (1973) from 1.13 million acres (1972). This was just equivalent to the area average during 1967-71 at 1.07 million acres. Likewise, the area under Flue-cured tobacco during 1973 at 390,000 acres was less as compared to 428,000 acres in 1972. But it was much more than the area average during 1967-71 at 338,000 acres. A similar trend was also noticed in respect of area under Burley variety of tobacco. As against 7000 acres in 1972, the area under the cultivation reduced to 6,000 acres in the following year. The area average during 1967-71 was 7000 acres.

While such is the picture of production and cultivation area in this line of production, the output yield per acre in respect of these varieties of tobacco also indicates almost a similar trend. During 1973, the yield per acre of Leaf tobacco was 748 pounds as against 815 pounds in 1972 and average yield during 1967-71 at 732 pounds. Similarly, the yield per acre of Flue-cured variety during 1973 come down to 630 pounds from 717 pounds in 1972, but it was more or less at the level of average yield per acre during 1967-71 at 626 pounds. The output per acre of Burley tobacco during 1973 at 833 pounds was, however, more than that of the preceding year at 769 pounds. It was, however, slightly less than the average yield during 1967-71 at 850 pounds.

The world tobacco crop harvested in 1973 is estimated at 10.4 billion pounds which is a new record. The output during the year registered about 3 percent increase over that of the preceding year. It is also slightly more than the record production achieved during 1967.

Consumption in the form of cigarette now accounts for about two-third of total world tobacco use. World cigarette output grew at an average annual rate of about 5 percent during the 1950's and about 3.5 percent during the 1960's. The increase was 4.2 per cent from 1971 to 1972. The increased demand for cigarette type leaf tobacco encouraged greater production of these varieties in a number of developing countries.

PRODUCTION PROGRESS IN SILICON CARBIDE

In India production of silicon carbide has recently been undertaken by one factory with an installed capacity of 25,000 tonnes. An additional capacity of 2,000 tonnes has also been approved. Until recently, this was not produced in India and even today, the product is imported. In past, imports have been Rs. 2.86 million during 1970-71 and Rs. 6.32 million in 1971-72.

According to the assessment made by the Task Force, an installed capacity of 10,000 tonnes per annum will be needed to meet the demand by 1978-79.

There is scope for considering proposals for further capacity in the field. Since this is an electro-thermal industry consuming significant quantity of electric power, availability of power at appropriate rates, will need to be considered for locating silicon carbide plants.

Petroleum coke is a primary raw material and is available indigenously. The Council of Scientific and Industrial Research and the Institute of Science, Bangalore, have been engaged in development of indigenous processes for the manufacture of silicon carbide.

SYNTHETIC DETERGENTS
A REVIEW

Synthetic detergents are of recent development and are becoming increasingly popular as a substitute for washing soap. Apart from convenience of use, these are useful in saving edible oils from being diverted to soap manufacture. The importance of detergents will increase in the wake of indigenous manufacture of detergent alkylate.

Commercial production of detergents in India started in 1958 with the establishment of two factories. At present there are 5 factories with a total installed capacity of 55,700 tonnes per annum. The production during1971 and 1972 has been 51,800 tonnes and 62,000 tonnes, respectively. Maharashtra accounts for bulk of the production with three factories while two are located in West Bengal.

Import of synthetic detergents is banned. The item is being exported. Twelve schemes totalling up to an additional capacity of 128,000 tonnes have been approved.

Applications were invited for establishment of capacity in this field in new areas on the principle of dispersal of capacity in various parts of India. These as well as requests from existing manufacturers for enhancement of installed capacity are under consideration.

Dodecyl benzene, the basic raw material required in production is being imported. Its consumption at present is around 9,000 tonnes per annum corresponding to 62,000 tonnes of detergents production. The demand for dodecyl benzene is expected to increase in the next few years to about 25,000 tonnes per annum on the basis of availability of raw materials for its production. The petro-chemical manufacturing programme of the Indian Petro-chemicals, Koyali, includes a provision for manufacture of 30,000 tonnes of soft detergent alkylate. This production is expected to be available from 1976-77. The demand for detergents would then correspondingly increase.

The Development Council for Oils, Detergents and Paints have estimated the demand for synthetic detergents for 1973-74 at about 80,000 tonnes per year. No estimates have been formulated with reference to the demand by 1978-79. Proposals were invited for establishment of synthetic detergent units of a standard capacity of about 10,000 tonnes per annum in those states where schemes in this field have not so far been considered.

On the basis of the above, there is scope for establishment of additional plants, particularly in areas which are distant from centres of production and in areas where the demand is not being fully met.

The other raw materials, such as, sodium tripolyphosphate, sodium sulphate, sodium silicate and carboxy methyl cellulose are available indigenously. Additional capacity for sodium tripoly phosphate is also envisaged.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

WET-HEAT RESISTANT LEATHERS

A leather which can stand wet-heat in boiling water continuously for a minimum period of 2 hours has been developed by the Central Leather Research Institute (CLRI), Madras. The leather so produced will have better sweat resistance besides being non-shrinkable at the boiling point of water.

The process consists in applying a cross-linking agent at the appropriate stage of chrome tanning, without affecting the processing method of the leather. The cross-linking agent can be prepared easily with chemicals available in the local markets. This is an entirely new product unknown to leather industry and will be highly useful for suedes (plain or printed) and industrial leathers,.

Several batches of skins (50 skins per batch) were treated with the product and the results were very good.

Tanned leathers receiving the treatment for heat resistance can be fat-liquored by any fat-liquor normally used, and can be further processed for dyeing and finishing in the normal way or at elevated temperature for obtaining the desired feel, softness, etc. No adverse effects on flesh or grain surfaces arise due to this treatment. The area loss due to this treatment may be about 4-5per cent. The process can be adopted for making semi-chrome diaphragm leather and a variety of softy leathers.

Any chrome tanning factory can make and use the cross-linking agent with a small capital investment needed for a stainless steel jacketed mixing vessel with ancillaries. No imported components are involved. The raw materials or their derivatives are available indigenously.

Application trials can be demonstrated by CLRI to the prospective parties, but the details of manufacture of the cross-linking agent will be given only after the agreement is executed with the National Research Development Corporation of India.

RADIO FREQUENCY GENERATOR

National Research Development Corporation of India offers technical know-how for the manufacture of (i) Radio Frequency Generator, and (ii) Probe for Ultrasonic Therapy.

Radio frequency generator is a device for generation of high frequency electrical waves which can be converted into ultrasonic waves when connected to a probe. Ultrasonic waves find numerous applications in engineering biology and medicine. When used in conjunction with appropriate probes, ultrasonic waves can also be used for atomisation of low viscosity liquids and for production of aerosols.

Radio frequency generator is normally made of transmitting tubes of required power and frequency in which the source of D.C. power is rectifier valves.

This R.F. generator developed by Regional Research Laboratory, Bhubaneshwar is an improved one in which the rectifier valves have been replaced by the solid state device (rectifier diodes). This has resulted in economy in power consumption and space required. This generator also incorporates a suitable electrotimer to obtain the R.F. energy for a required span of time.

All the essential components viz., rectifier diodes, oscillator valve, condenser, transformer etc. required for production of the R.F. generator are indigenously available. An investment of about Rs. 900,000 is required for setting up a unit with an annual output of 600 generators.

INDIA'S EXPORT TRADE IN 1973-74

India's exports, excluding re-exports, attained a high level of nearly Rs. 24781.60 million in 1973-74 as compared to Rs. 19643.90 million in 1972-73. The export growth in 1973-74 was in respect of most of the product groups that have been on the country's export front, both in the traditional and non-traditional group of commodities.

In the food and live animal group, export trade in meat and meat preparations, fish, fruits and vegetables, sugar and preparations, coffee, spices and feeding stuff for animals has registered sizeable uptrend. The off-take of meat and meat preparations has nearly doubled to about Rs. 68.49 million from Rs. 34.70 million. Fish and fish preparations were supplied abroad at a value of Rs. 872.80 million in 1973-74 against Rs. 538 million in the preceding year. Interestingly, the export trade in sugar and sugar preparations was at Rs. 430 million against Rs. 139 million. Fresh fruits and nuts including cashew kernels secured Rs. 789 million as compared to Rs. 727 million. Vegetable exports, both in the fresh and preserved form secured Rs. 85 million as compared to Rs. 52 million. Overseas demand for Indian coffee picked up sizeably; it earned Rs. 460 million against Rs. 329 million in the comparable years. Spices constituted another example of dynamic export expansion having secured foreign exchange worth nearly Rs. 549 million as against Rs. 291 million. Even exports of feeding stuff for animals rose to Rs. 1802 million compared to Rs. 790.70 million.

There was, however, a shortfall in the export of one of the most important traditional commodities-tea; the product earned Rs. 1448.50 million against Rs. 1473 million. Cereals and preparations exports reduced sizeably to Rs. 98.80 million from Rs. 854 million, though individually the export earning of rice rose to Rs 66.80 million from Rs. 34.90 million.

Unmanufactured tobacco exports improved appreciably to the tune of Rs. 684 million against Rs. 610.70 million. The export trade in tobacco manufactures was, however, a little less at about Rs. 25 million against Rs. 28 million.

In the category of crude materials, the off take of wood, lumber and cork has picked up. The export value of wood in the rough and roughly squared form, particularly, brightened to the level of Rs. 170 million, against Rs. 94.30 million. Oil seeds, oil nuts and oil kernels also fetched remarkably more at a value of Rs. 358 million against Rs. 88 million, registering nearly four fold increase.

Textile fibres, (not manufactured into yarn, thread or fabrics) particularly those of cotton, wool and silk were in much demand overseas. Cotton exports fetched Rs. 366 million against Rs. 247 million while those of wool and animal hair secured nearly Rs. 85 million as compared to Rs. 70 million. The off-take of silk increased three-fold to the tune of Rs. 24 million against Rs. 8 million. Jute fibre exports, however, fell from a level of Rs. 49 million in 1972-73 to Rs. 44 million in the following year.

In the group of metalliferrous ores, metal scrap and crude minerals, export effort in iron ore and concentrates has yielded further success. This ore was supplied abroad to fetch a little more than Rs. 1328 million against Rs. 1098 million in the preceding year. Export trade in the ores and concentrates of non-ferrous base metals was of the order of Rs. 196 million against Rs. 147 million. Overseas supplies of crude minerals such as mica. quartz, common salt, calcined kaynite, calcined, magnesite and natural steatite powder, however, registered a decline at Rs. 190 million compared to Rs. 223 million in the preceding year.

Quite a few crude vegetable materials figured prominently in India's export trade list. These include henna leaves and powder, gums and resins, lacs, tamarind, guar flour and palm fibre. These materials earned as much as Rs. 576 million in foreign exchange as compared to Rs. 396 million in the previous year.

Export trade in fixed vegetable oils and fats also looked up to fetch Rs. 308 million against Rs. 255 million. The export growth in respect of castor oil was particularly appreciable. This oil fetched as much as Rs. 298 million against Rs. 226 million.

Chemicals and allied products which are comparatively new entrants in India's export trade have also fared exceedingly well. Foreign exchange earning of the entire group was nearly Rs. 570 million as compared to Rs. 404 million in 1972-73. The group of chemical elements and compounds fetched Rs. 144 million against Rs. 76 million. Both organic chemicals and inorganic chemicals, and oxides contributed to this increase. Dyestuffs, tanning and colouring materials were also exported to earn more. In this category, the export performance of synthetic organic dyestuffs was brighter at Rs. 80 million against Rs. 45 million. However, pigments, paints and varnishes suffered a decline at Rs. 33 million as compared to Rs. 46 million. Medical and pharmaceutical products constituted another line of export growth as these products brought in about Rs. 150 million against Rs. 103 million. Essential oils and perfumery materials including toilet preparations as well as polishing and cleansing preparations together earned more at Rs. 116 million against Rs. 100 million in 1972-73. Essential oils which fetched Rs. 61 million against Rs. 41 million had the credit for achieving this improvement, notwithstanding a marginal decline in the export value of perfumery materials and cosmetics including soaps, cleansing and polishing preparations.

Leather manufactures, such as, saddlery and other harness maker's goods, leather uppers and leather components of footwear were also prominent in the export field and earned Rs. 26 million against Rs. 12 million. The export value of fur skins was, maintained at a level of Rs. 28 million in both the years. Export value of the entrh leather, group however, declined to Rs. 1658.65 milliom from Rs. 1704.45 million.

India supplies abroad a variety of paper and paper board as well as articles made of paper pulp. These products have been in keen demand overseas as proved by the fact that their exports earned Rs. 69 million in 1973-74 as compared to Rs. 42 million in the previous year.

Textile yarn and fabrics constitute one of India's prestigious items of export. The export earning of this secetor shot up to Rs. 5614.50 million from Rs. 4570.50 million. Woven textile fabrics (other than cotton and Jute) fetched Rs. 362 million against Rs. 156 million and floor coverings and tapestries Rs. 314 million against Rs. 267 million. But the most significant increase in this line was that of cotton manufactures which fetched Rs. 2353 million against Rs. 1267 million. Export trade in jute manufactures, however, declined to Rs. 2255 million from Rs. 2472 million, while those of textile yarn and thread fell to Rs. 302 million from Rs. 371 million.

Overseas supplies of pearls and precious stones also secured more–Rs. 1067 million against Rs. 779 million.

In the manufactured products group, iron and steel exports witnessed improvement at Rs. 580 million against Rs. 418 million in 1972-73. The major categories responsible for the improvement in the export were : pig iron; rails and railway track construction material; universal plates and steel tubes and pipes, The off-take of bars and rods as well as of ingots and other primary forms of iron and steel was, however, reduced.

Among non-ferrous metals silver, platinum and other metals of the platinum group which did not figure at all in the export list in 1972-73, fetched as much as Rs. 56.40 million in 1973-74. This is fact, raised the overall exports of non ferrous metals to Rs. 157.60 million from Rs. 83.50 million. Copper was exported to fetch Rs. 59 million against Rs. 48 million and aluminium Rs. 40 million against Rs. 35 million.

Of metal manufactures, the active product groups were machine tools and handtools and household equipment of base metals. The most striking improvement was in respect of hand and machine tools which netted Rs. 102.50 million against Rs. 74.50 million.

In the non-electrical machinery sector, export improvement was obvious uniformly in respect of all machines including power generating machinery, agricultural machinery and implements, office machines, metal working machinery, textile and leather machinery, machines for special industries and machine (non-electrical) parts. The group, in all, fetched Rs. 462 million as compared to Rs. 294 million.

Similarly, almost all the varieties of electrical machinery and apparatus witnessed uptrend. This group has been consistently active in the export-trade in recent years and in 1973-74, the export value reached a record level of Rs. 283.40 million as against Rs. 234.30 million in the preceding year. Electrical power machinery and switchgears secured Rs. 74 million as compared to Rs. 56 million; domestic electric equipment Rs. 32 million against Rs. 31 million; telecommunication apparatus Rs. 46 million against Rs. 29 million and other electrical machinery Rs. 70 million against Rs. 52 million. Earning of equipment for distributing electricity, however, declined to Rs. 61 million as compared to Rs. 66 million.

While the entire group of transport equipment netted foreign exchange worth Rs. 401 million as against Rs. 322 million, the most important growth sectors were railway vehicles and bicycles. Railway vehicles were exported at value of Rs. 65 million as compared to Rs. 40 million. Bicycle and other cycle exports were up at Rs. 147 million against Rs. 104 million. Even ships, boats and aircrafts also fetched more at about Rs. 39 million in comparison to Rs. 18.40 million. There was, however, a decline in the export value of road motor vehicles at Rs. 150 million compared to Rs. 160 million.

Clothing constituted another line of export promotion mainly comprising of cotton dresses, man-made fibre garments, shawls and scarves, knitwear and woollen wears, such as, sweaters and cardigans. These brought in foreign exchange at Rs. 954.50 million against about Rs. 560 million.

A variety of footwear including rubber footwear, leather - soled and embroidered rubber soled footwear was in good demand abroad. The footwear group fetched foreign exchange worth Rs. 134 million as against Rs. 129 million in the comparable year.

Directionwise, Indian export in 1973-74 have improved to all regions with the exception of Africa. where these declined marginally to Rs. 1008.74 million from Rs. 1010.45 million. The shortfall was inspite of improved off-take by countries like Republic of Dahomey, Ethiopia, Ghana, Kenya, Libya, Malavi, Mauritius, Sieria Leone, Tanzania and Uganda. The largest share in the export trade with the African countries was that of Sudan and that of A.R.E.

In the North American region, imports of U.S.A. from India went up to Rs. 3421.40 million from Rs. 2753.70 million and those of Canada to Rs. 307.40 million from Rs. 281.50 million. Latin American countries imported more at about Rs. 121 million against Rs. 42 million in 1972-73, registering nearly a threefold increase.

Japan leads the list of ECAFE importers. While the entire ECAFE absorbed as much as Rs. 7299 million against Rs. 5654 million, the Japanese purchases amounted to Rs. 3549 million as compared to Rs. 2167.50 million. The growth of exports to other FCAFE countries would also make a revealing study. Australia imported worth Rs. 504 million against Rs. 259 million, Afghanistan Rs. 149 million against Rs. 122 million, Iran Rs. 427 million against Rs. 247 million, Malaysia Rs. 241 million against Rs. 93 million, Sri Lanka Rs. 98 milllion against Rs. 79.40 million, Singapore Rs. 427.60 million against Rs. 178 million, Thailand Rs. 92 million against Rs. 57 million and New Zealand Rs. 134 million against Rs. 82.40 million. Among the countries that imported less in 1973-74 as compared to the previous year were Burma, Nepal and Bangladesh.

The non-ECAFE Asian and Oceanian countries which mark a sizeable area of India's export growth also improved their imports from India to Rs. 1383 million in contrast to Rs. 726 million. In this area significant increase was recorded in exports to Bahrein Islands, Dubai, Iraq, Jordan, Qatar, Saudi Arabia, Muscat and Oman.

The East European region, as usual, proved to be one of the important importers of Indian goods. The region, as a whole, absorbed worth Rs. 4775.60 million against Rs. 4695 million. U.S.S.R. topped the list of buyers for Indian products in this region. Purchases were, however, less—Rs. 2836.60 million against Rs. 3047.60 million. The intake of Czechoslovakia and Rumania was also less to some extent. The shortfall in their imports was, however, more than compensated by the increased intake of Bulgaria, German Democratic Republic, Hungary, Poland and Yugosalvia.

The European Common Market countries (including U.K.) have also improved their imports from India. Their total off-take during the year was valued at Rs. 5921.50 million against Rs. 4061.40 million. This rise was shared by all the countries in the region. Similarly with the exception of Portugal and Sweden whose purchases were marginally less during the year (1973-74) compared to that in the preceding year, all other EFTA countries including Austria, Norway and Switzerland improved their intake. Total imports of this region from India added up to Rs. 318.75 million compared to Rs. 277.25 million in the preceding year.

In sum, the country's export performance during the year under review was creditable, not-withstanding various adverse factors, both on supply and demand sides. □

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EXPORT SUCCESS IN IRON AND STEEL

The export earnings of iron and steel products from India increased to Rs. 580 million in 1973-74 from Rs. 417.60 million in 1972-73 and Rs. 408.71 million in 1971-72.

During 1973-74, export value of pig iron, sponge iron, iron and steel powders and ferro-alloys improved to Rs. 215 million from Rs. 203.14 million in the preceding year, while universals, plates and sheets of steel and iron brought in more at Rs. 6 million against Rs. 4.45 million. The export value of ingots and other primary forms of iron and steel also registered an uptrend at Rs. 12 million against Rs. 11.80 million. Foreign exchange earning of steel/iron tubes, pipes and fittings more than doubled to about Rs 242.90 million from Rs. 111.80 million while that of rails and railway track construction material of iron and steel was up at Rs. 34.25 million against Rs. 11.95 million. Overseas supplies of iron and steel wire also fetched more at Rs. 2.53 million in contrast to Rs. 1 million. The earning of iron and steel bars was, however, less at Rs. 63.83 million compared to about Rs. 71.80 million in 1972-73.

In the above context, the export performance of M/s. Hindustan Steel Ltd. (HSL), in the public sector is noteworthy. Set up two decades back, the firm entered the export market with pig iron and semis in 1959. Subsequently, it stepped up its exports to cover a wide range of products. Total exports of the firm so far amount to Rs. 2410 million. Quantumwise, it has supplied 6 million tonnes of pig iron, ingots, semis, finished steel products and coal chemicals to markets abroad. The supplies were directed to over 40 countries of the world against international competition. Since its commissioning in October, 1972, the Bokaro Steel Plant alone has exported through HSL, pig iron valued at Rs 110 million. Total sales turnover of the company since its inception amounts to Rs. 38,860 million.

Besides achieving export success to this extent, HSL's three steel plants at Bhilai, Rourkela and Durgapur have supplied over 12.8 million tonnes of pig iron ore, one million tonnes of ingots, 7.3 million tonnes of semis and over 22 million tonnes of finished steel to the Indian industry. Additionally, it has supplied about 5.6 million tonnes of coke, a million tonnes of coal chemicals and 5.3 million tonnes of miscellaneous by-products including middlings, slags and dolomite. Its contribution to agricultural industry in the country covers supply of over 1.8 million tonnes of calcium ammonium nitrate and 550,000 tonnes of ammonium sulphate - fertilizers manufactured from by - products. The company is also credited for ensuring a steady supply of steel for irrigation projects, construction of dams, deep tube-wells, farm equipment and other agricultural uses.

ABRASIVES ON EXPORT STREAM

India's exports of grinding and polishing wheels and stones during 1973-74 amounted to Rs. 7.15 million while in 1972-73, the export value was of the order of only Rs. 2.78 million.

The export range includes abrasive grains of silicon carbide and other synthetic abrasive grains, diamond impregnated wheels, grinding wheels of natural stone, grinding wheels of synthetic abrasive grains, other grinding wheels of stones, hand polishing stones, whetstone, oilstone and hones. In 1973-74 abrasive grains of silicon was the major item of export in the group. It alone earned Rs. 3.25 million in foreign exchange with supplies mainly directed to UK, Japan and Norway. Grinding wheels of synthetic abrasive grain constituted the next best item of export dynamism. Their export value totalled about Rs. 1.45 million. Japan, Malaysia, Singapore, Thailand and USA were the major buying countries. Whetstone, oilstone and hones were equally active in the export trade to net Rs. 1.12 million in foreign exchange, mainly from UK, Federal Republic of Germany and Singapore. The individual export earning of other products in the group was comparatively not much.

One of the manufacturers in the line, M/s. Grindwell Norton Ltd. (148, M.G. Road, Bombay-1), have been successful in securing orders from Japan for bonded abrasive products worth Rs. 2.7 million. Products of export interest to the firm include bonded abrasive grinding wheels, oilstones, sharpening stones, tile polishing blocks and rubbing bricks, while their export supplies are directed to a number of countries, such as, France, UK, Iran, Iraq, Kuwait, Lebanon, Turkey, Hong Kong, Indonesia, Malaysia, Philippines, Singapore, Thailand, Japan. Australia, Bangladesh and New Zealand.

The production profile of the firm covers bonded abrasive products of all types, silicon carbide grains and super refractories.

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Total annual licensed capacity for grinding wheels (bonded abrasives) is of the order of 85,448 tonnes in India, while the installed capacity, shared by 6 units in the line, is rated at 7000 tonnes per annum. Actual production was of the order 6500 tonnes in 1973 as against 6142 tonnes in 1972. Capacity utilisation in this industry is about 90 per cent and imports are restricted to special types of grinding wheels required by the ball bearing industry and for the manufacture of razor blades.

The demand for grinding wheels is assessed at 16,000 tonnes per annum by 1978-79. The existing capacity and the capacity likely to materialise from the schemes under implementation is expected to take care of the demand for general purpose grinding wheels. Proposals for establishment of export oriented schemes and those for the manufacture of specialised types of grinding wheels, such as, rubber and bakelite bonded wheels could be considered. Foreign collaboration proposals for manufacture of specialised types of grinding wheels are also considered on merits.

AGRICULTURAL SPRAYERS TO IRAQ

Besides supplying a variety of agricultural machinery and equipment to foreign markets, India is also exporting agricultural sprayers to a number of countries. While exports of agricultural machinery and equipment amounted to about Rs. 12 million in 1973-74, that of agricultural sprayers was, however, limited to Rs. 0.53 million. Malawi with an intake of the order of Rs. 0.32 million was the major buyer for these sprayers. Afghanistan, Sri Lanka, Ethiopia, Kuwait, Kenya, Sweden, Nepal and Muscat were the other purchasers in order of the value of their imports.

In its endeavour to step up the exports of agricultural sprayers, M/s. American Spring and Pressing Works (P) Ltd., Malad, Bombay, have recently exported 4000 hand compression sprayers to the Directorate General of Plant Protection, Baghdad, Iraq. The order will earn over Rs. 1.50 million in foreign exchange.

Besides hand and power operated agricultural sprayers and dusters, the production range of the Bombay firm covers agricultural equipment, such as, threshers and seed drills.

EXPORT PERFORMANCE AND POTENTIAL

SHARP INCREASE IN GLASS AND GLASSWARE EXPORTS

The preceding year proved to be one of impressive export success for India's glass Industry. The exports during the year (1973-74) brought in increased foreign exchange earning valued at Rs. 37.40 million which recorded a rise of over 35 percent over the exports during the preceding year at Rs. 27.90 million.

In the total export earning during the year under review, glassware secured the lion's share at Rs. 23.65 million as against Rs. 15.20 million (1972-78) while glass earned Rs. 13.73 million as compared to Rs. 12.67 million.

A wide variety of glassware were supplied overseas during the year. The export range included bottles and phials, vials for injectables, glass inners for vacuum flasks, glass tableware and other articles for household, hotel and restaurants, glass ampules, laboratory glassware, glass bangles, imitation pearls and imitation precious and semi-precious stones, fancy or decorative glass smallwares and other glass articles.

Bangladesh constituted the biggest market for bottles and phials. Nepal, Dubai and Indonesia were the other significant buyers. Vials for injectables were mainly imported by Indonesia and Iran while Poland, USSR, Australia and Federal Republic of Germany and Japan were the principal destinations for glass inners for vacuum flasks. Household, hotel and restaurant tablewares and other articles were bought chiefly by Nepal, Saudi Arabia and Bangladesh. Glass bangles were imported by over 26 markets abroad amongst which Afghanistan and Malaysia were prominent. For imitation, precious and semi-precious stones USA, UK, Federal Republic of Germany, Afghanistan and Japan were the principal importers while fancy or decorative glass smallwares were bought by over a dozen countries including USA, UK and Federal Republic of Germany.

The export range in the group of glass covers optical glass including blanks for special lenses, drawn or blown glass like window glass and others, cast rolled glass (worked and unworked), safety glass (toughened) or laminated), sheet or plate glass (one surface metal coated mirrors), and many other articles of glass. Iran, USSR, Sri Lanka, Italy, Singapore, Mauritius, Indonesia, USA, Saudi Arabia, Kenya, Australia, Muscat and Tanzania Republic were the leading importers.

In India, in the organised sector, the production of various types of glass items in 1973 and 1972 was : bottles and vials (including semi-automatic) 180,000 tonnes and 178,600 tonnes; sheet glass 19 million sq. meters and 19.1 million sq. metres; glass shells 150 million pieces and 176 million pieces; vacuum flasks 5.5 million pieces and 5.3 million pieces; laboratory glassware 2081 tonnes and 1,840 tonnes.

INDO-IRAQI TRADE RELATIONS

Indo-Iraqi trade relations date back to several centuries. The Arabs had always been the bridge between Europe and India, the land of spices, jewellery and fine textiles. Naturally many of the requirements of the Arab people were met from India. In fact, till three decades back, India was the main source of supply of very many commodities to Iraq and still continues to be so. These include tea, spices, machinery and transport equipment, iron and steel, jute manufactures, textile yarn and thread, fruits and vegetables, cotton manufactures, floor coverings, textiles fabrics, plastic materials, groundnut kernels, cereals and cereal preparations, etc. The new products which have found a market in Iraq are iron and steel, machinery and transport equipment and many other such engineering items.

A quick glance at the trade between India and Iraq would reveal that compared to the past few years, India's trade with Iraq has increased. Although the closure of the Suez Canal might have favoured India to some extent in increasing her competitiveness, it is the availability of an increasing range of manufactured items, quality of the products and the competitive price offered that have really helped in strengthening the trade relations between the two countries.

Iraq is emerging as one of India's major trading partners in West Asia. The total value of India's exports to Iraq in 1973-74 was of the value of Rs. 180 million. In 1971-72, it was only of the order of Rs. 90 million. Apart from the items referred to above, India is also exporting plywood and construction material to Iraq. Imports from Iraq mostly consist of dates, petroleum products and sulphur. The expanding economy of Iraq makes it possible to increase the two-way trade. The industrialisation programme of the Iraqi Government offers immense scope for joint ventures and trade development.

India's trade relations with Iraq are regulated by the annual trade agreements negotiated every year. The economy of Iraq and India are complementary to each other and there is vast scope for trade and economic cooperation between the two countries. India is deeply conscious of the understandable anxiety of Iraq to diversify her production base. During the last 27 years, India has made considerable progress in the field of technology and she will be too happy to share this technology and know-how with friendly countries like Iraq. The technological know-how in the field of engineering and railways is already being utilised by Iraq.

EXPORT TREND IN 1974-75

India's exports, including re-exports, during the first four months of 1974-75 (April - July 1974) are provisionally estimated at Rs. 9540 million. This reflects an increase of Rs. 2940 million or 44.5 per cent over the exports valued at Rs. 6600 million in the same period of the preceding year.

Of the variety of commodities and products which contributed to this improvement, sugar alone accounted for an increase of Rs. 571 million. It earned Rs 608 million in foreign exchange in April - July 1974 as against Rs 37 million in the corresponding period of the preceding year. The exports of ready - made garments have also registered a sizeable increase. The foreign exchange earning of cotton textiles as a whole was also up notwithstanding a decline in the export quantity of cotton piecegoods. Other commodities which revealed an increase in exports in varying degree include coffee, cashew, kernel, marine products, spices, handicrafts, engineering goods, finished leather and footwear. Iron ore, groundnut extractions and unmanufactured tobacco were, however, the important items which registered a decline in their export value during the period under review.

India's imports estimated at Rs. 10,760 million during the period (April - July 1974) were also up as compared to Rs. 7060 million in the corresponding period of the preceding year.

INDO-BULGARIAN TRADE PROTOCOL

A trade protocol has been recently concluded between India Bulgaria. The protocol envisages a total trade turnover of the order of Rs. 850 million between the two countries.

Besides traditional products principal items of Indian export to Bulgaria will include industrial and consumer goods, chemicals and pharmaceuticals, machinery and equipment, radios, bicycles and electronic components.

India's imports from Bulgaria will be comprised of mainly fertilizers, steel products and essential oils.

India's total exports to Bulgaria during 1973-74 amounted to Rs. 196.50 million as compared to Rs. 188.60 million in the preceding year. Her imports from Bulgaria during the year were of the order of Rs. 138 million during the year against Rs. 95.40 million in 1972-73,

EXPORT POSITION IN TOBACCO

In the first five months of 1974-75 (April- August, 1974), India's exports of unmanufactured tobacco secured foreign exchange at a value of Rs. 492 million (40,507 tonnes) while those of tobacco products amounted to Rs. 2.66 million, according to the tobacco Export Promotion Council, Madras.

United Kingdom purchased the bulk of Indian supplies of unmanufactured tobacco at a value of Rs. 286 million (21,171 tonnes) and contributed over 58 percent to the total foreign exchange earning during the period. USSR, the next significant buyer imported 6803 tonnes at Rs. 83.20 million while Japan, the third important destination bought 4729 tonnes at a cost of Rs. 63 million.

Among other buyers, Irish Republic imported 871 tonnes at Rs. 13.25 million, Libya nearly Rs. 9 million (555 tonnes), Indonesia Rs. 8.53 million (1323 million), Belgium Rs. 6.10 million (567 tonnes), Czechoslovakia Rs. 4.56 million (375 tonnes), Arab Republic of Egypt over Rs. 3.90 million (634 tonnes), Somalia Rs. 2.62 million (698 tonnes), Switzerland Rs. 2.67 million (260 tonnes), Saudi Arabia Rs. 2.30 million (639 tonnes), and Bangladesh Rs. 1.50 million (389 tonnes).

Among tobacco porducts, cigarettes brought in Rs. 1.11 million, hookah tobacco Rs. 1.02 million and Bidis Rs. 0.41 million. Besides these products, snuff, chewing tobacco and scented Zarda were also exported.

In the full year of 1973-74, India's total exports of tobacco and tobacco manufactures brought in Rs. 709.15 million in foreign exchange as compared to Rs. 638.70 million in 1972-73. The share of unmanufactured tobacco was of the order of Rs. 684.15 million as against Rs. 610.70 million in 1972-73 while that of tobacco manufactures accounted for Rs. 25 million as against nearly Rs. 28 million.

MILLMADE TOWELS BRING MORE FOREIGN EXCHANGE

India's export trade in mill-made towels brought in as much as Rs. 68.15 million in foreign exchange in

1973-74 against only Rs. 56.25 million in 1972-73. In fact, the export trend in the preceding years was somewhat buoyant—Rs. 45 65 million in 1969-70, Rs. 56.35 million in 1970-71 and Rs. 48.90 million in 1971-72.

USA emerged as the principal importing destination which alone bought worth over Rs. 22 million accounting for more than one-third of the total Indian supplies abroad during 1973-74. United Kingdom closely followed USA having purchased at a cost of Rs. 17.65 million. In fact, both these sophisticated markets bought together worth nearly Rs. 40 million and contributed nearly 59 percent to the total foreign exchange earning in the year.

Among others, Poland purchased worth Rs. 4.45 million, New Zealand Rs. 3.43 million, Canada Rs. 3.34 million, Japan Rs. 2.17 million, Denmark Rs. 1.26 million, German Democratic Republic Rs. 1.40 million and Federal Republic of Germany Rs. 1.20 million, Norway, Sweden, Zambia, Singapore, Netherlands Bulgium, Austria and Kuwait were other significant buyers.

In 1972-73, USSR, was the largest single importer having imported alone a major portion of Indian supplies at a value of Rs. 16.35 million. USA the topmost buyer during 1973-74, however, stood as the second important destination having imported worth Rs. 13.55 million, followed by UK at Rs. 9.80 million, Poland Rs. 6.20 million, Canada Rs. 2.83 million, Federal Republic of Germany Rs. 1.45 million, Denmark over Rs. 1 million and New Zealand Rs. 1.20 million. Besides, Bulgaria, Japan, Norway, Kuwait, Nigeria and Fiji Islands were the other markets.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

AGRICULTURAL MACHINERY AND IMPLEMENTS

In the post-independence era, agricultural operations were, being conducted with the help of primitive implements. But, today Indian peasants are employing modern means of cultivation to increase farm yields. The range of production has widened to include machines for processing agricultural products like paddy cleaners and separators, rice hullers and polishers, cane crushers, chaff cutters and oil expellers, besides improved types of field implements and tools. These soon brought in its wake centrifugal pumps and diesel engines. In fact, the growth of the Indian agricultural implements industry has been particularly remarkable during recent years.

India launched an era of planned economic development beginning with the first Five-Year Plan in 1950 and has since completed four Five-Year Plans. The stimulus given by the various development programmes and the projects implemented under these Plans has resulted in developing the economy as a whole. Not only has Indian agriculture witnessed Green Revolution but a number of sophisticated industries using modern technology have been set up in the field of engineering, chemicals, metals and other basic and heavy sectors. To cater to the increased requirements of the economy, there has been substantial development of infra-structure facilities.

With the increase in production and improvement in the standard of products manufactured, the industry has started exporting agricultural machinery and implements, chiefly to countries in South-East Asia, the Middle East and East Africa.

Exports of Agricultural Implements during the past 9 years is given in the table below :

Year	Exports (Rs. million)
1965-66	0.9
1966-67	0.6
1967-68	2.0
1968-69	4.7
1969-70	4.6
1970-71	5.7
1971-72	3.98
1972-73	6.00
1973-74	12.

MANUFACTURE OF NITRO-BENZENE

Nitro-benzene is required mainly in the production of aniline and dye-stuff intermediates. Apart from a factory in the public sector accounting for an installed capacity of 12,000 tonnes per annum, the item is also being produced in the small scale sector. Production during 1972 was 3,500 tonnes.

Imports during 1969-70, 1970-71 and 1971-72 have been 294 tonnes, 924 tonnes and 3,314 tonnes, respectively.

According to the Directorate General of Technical Development in the Ministry of Industrial Development of the Government of India, the demand by 1978-79 will be about 24,000 tonnes per annum. There is, consquently, considerable scope for additional capacity in this field.

It may be useful to integrate production of nitro-benzene with aniline, particularly in the vicinity of fertiliser projects, from the point of view of easy access to nitric acid which is the major raw material for nitro-benzene.

MANUFACTURE OF ORTHO XYLENE

Ortho xylene is required in the manufacture of phthalic anhydride which is the raw material for alkyd resins. The resins are required in the manufacture of paints, PVC plasticizers and dye-stuff.

There is a scheme for its manufacture in the public sector on the basis of raw materials derived from the refinery at Koyali. The capacity of that plant will be 21,000 tonnes per annum.

Imports have been 2,960 tonnes during 1969-70, 4,300 tonnes during 1970-71 and 7,080 tonnes during 1971-72.

Government have under consideration the establishment of a plant for 10,000 tonnes annual capacity in the public sector in Assam.

The Task Force for Petro-chemicals has assessed the demand by 1978-79 as 40,000 tonnes per year. On the basis of the above position, there is scope for a third ortho xylene plant in conjunction with the new aromatics project which is being programmed. It is likely that additional capacity for orthoxylene may also be envisaged in the public sector.

MATERIAL HANDLING EQUIPMENT

The use of material handling equipment acquired significance in India after 1960. Entrepreneurs in large and medium-sized industries, and in many of the small industries, too, realised that in order to cope with the demand for their products, they had to adopt modern methods of material handling.

India is now making heavy and faster mechanical equipment, like electrically-operated cranes for ports, factories, warehouses, power-houses, stockyards and conveyors. The production of haulage equipment like winches, capstans, car spotters, skip hoists, freight elevators and bucket elevators has also gathered momentum.

Mechanical handling devices, like diesel-operated mobile cranes, fork lift trucks, both battery and diesel-operated, powered platform trucks, and electric hoists have been developed in India to cater to the increasing demand for material handling equipment. Fork lift truck were earlier made on a small scale; but in recent years, the production has increased.

Progress has also been made in the manufacture of winches and capstans. Winches are manufactured for wider application like transportation of ores in mines, transporting maintenance staff to the power house in hydre-electric power stations, for laying of penstock pipes, for shunting of wagons in railway sidings, for mucking operations in tunnelling works and for hauling vessels along slipways. Other uses for which winches have been designed are for the operation of lock and sluice gates, mooring of ships at docks, erection of heavy structures, operation of skipchargers for feeding material to blast furnces, kilns and so on.

A large number of companies are manufacturing belt conveyors on quite a large scale. One of the leading manufacturers has designed, engineered and installed one of the largest belt conveyor systems in Asia, which has been running successfully for the last few years. The manufacturing and designing capacity for belt conveyors has now been increased to such an extent that the entire demand in the country is being fully met. Indian manufacurers are also well equipped to meet the requirements of overseas buyers for material handling equipment according to their specifications.

Recognisable progress has been attained in the manufacture of various types of cranes other than truck-mounted and crawler-mounted cranes. The production of cranes in India, upto 1960, was negligible. However, since then, considerable progress has been made. Various types of Overhead Travelling Cranes are now manufactured in the country. Even sophisticated types of cranes like Port Cranes, Ship Cranes, Ship-building Cranes, Steel Mill Cranes, Gantry Cranes, Goliath Cranes, Magnet Cranes are made. In the Power House Crane Group, there is sufficient capacity in the country to manufacture cranes of almost any type, although the normal requirement is for capacities between 100 and 150 tonnes.

The production capacity of the crane manufacturing industry has multiplied manifold to meet the demand of steel works, cement plants, for bulk handling of limestones, power-houses upto a capacity of 250 tonnes and various other cranes required for heavy engineering industries. In addition, heavy grate-lifting dam cranes, can be designed and manufactured. So far, cranes of this type manufactured in India have had a maximum capacity of 125 tonnes with a lifting height of 43 metres.

With a view to entering overseas markets, modern material handling equipment for the engineering industry have been increasingly manufactured. Shipping and port facilities in India are increasing. All ports will have floating crafts including dredgers and high power tugs and material handling equipment like wharf cranes, mobile cranes and fork lift trucks.

CONSTRUCTION MACHINERY INDUSTRY

HIGHLIGHTS

Today, construction machinery manufactured in India is among the finest in the world. What is more, benefiting from the low cost of labour in India, the industry has been able to manufacture construction machinery at an economic price.

With the launching of India's Five Year Plans, and the subsequent development programmes, the construction machinery industry received the much-needed stimulus.

India today is one of the few countries in the world to produce sophisticated construction machinery like concrete mixers, concrete vibrators, vibrating earth rammers (compactor plates), vibrating road rollers and static road rollers.

At present, there are 14 units licensed for the manufacture of construction machinery. The total annual licensed capacity is approximately Rs. 295 million.

COAL AND MINING MACHINERY

Coal and mining machinery manufacture has assumed considerable significance in India consequent on the Indian Government's recent endeavour to reduce the country's dependence on imported crude. Efforts are currently underway to convert the oil-based industrial and power projects into the coal-based units to take advantage of the availability of inexpensive indigenous coal in the country. In this context, the coal and mining machinery sector has indeed to play a significant role for improving production of coal and other mine products.

At present, there are in all 12 units licensed for the manufacture of mining and coal washery equipment. The total licensed capacity of these units is of the order of Rs. 370 million per annum. The production range of the mining machinery covers coal cutters, loaders, converyors, trolleys and wire type electric locomotives, haulages, electric winders, mine axial fans, booster fans, pumps and sand pumps etc. In addition, a letter of intent has been issued for a capacity worth Rs. 23million.

The production of the machinery has been recently improving from year to year. For instance, during 1973, the output was valued at Rs. 90 million. It improved to this level from Rs. 79.30 million in 1972 and Rs. 46 million in the year that preceded. In addition to the machinery items already on the production stream, a potential for the manufacture of most of the types of mining and allied machinery required in the coal mines and non-ferrous mines also exists in the country.

It has been indicated in the draft Fifth Plan that the targets of capacity and production by the end of the Plan period (1978-79) would be of the order of Rs. 350 million and Rs. 240 million, respectively. The industry has capability to undertake manufacture of even certain specialised and sophisticated equipment that are not currently being manufactured by the industry indigenously. As a measure of diversification such items can be taken up for manufacture.

Their exists a sizeable scope for building additional capacity in respect of a number of machinery items in the field, such as, walking draglines, shuttle cars, drum sharers, heavy duty, scrapper chain conveyors, blast hole drills above 4" dia, raise clibers and pneumatic rocker shovels.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

FRICTION WELDING MACHINE DEVELOPED

A 12-ton friction welding machine has been recently designed and developed by the Central Mechanical Engineering Research Institute's Welding Research Centre - MERADO at Durgapur. The machine covers welds from 6 mm dia to 25 mm dia solid. Trial runs have proved the development to be completely successful.

Friction welding is a mechanical process in which the heat necessary to make the weld is provided by the friction caused by rubbing parts together. In practice, the components are pressed together and one is rotated relative to the other. A very large number of dissimilar material combinations can be successfully welded, including many low, medium and high carbon steels, alloy stainless steel and non-ferrous metals.

The process is mechanical and weld quality is unaffected by voltage fluctuations in the main power supply line. No flux or filler material is required. Weld is free from slag inclusion and porosity so that a neat and smooth weld flash is obtained.

The machine bases are of fabricated steel construction, expecially designed to resist the static and dynamic load with minimum deflection. The frictional welding head is of fabricated steel construction and carries a drive motor. The drive is via a V-belt to the main spindle which is positioned horizontally through the head. An arrangement of instantaneous stopping of the rotating part has been incorporated in head stock.

The hydraulic system operates at 2000 psi maximum and is provided in the form of a separate unit which provides for flexibility in the floor layout and also ensures the valves to be easily accessible for routine maintenance. The electrical control panel is also a free-standing unit. Once the machine has been set up for a particular task by choosing the optimum combination of pressure, speed and time, the whole welding sequence is automatically repeated.

The machine has been used to set up the different parameters for welding of M.S. to M.S. and M.S. to S.S. For other ferrous and non-ferrous metals, research is in progress.

RAPID-SETTING LIME PLASTER

Lime plasters have long been in use and have been severely tested by time. They are characterized by high plasticity, workability and water retention. They adhere well to the walls and are resistant to rain penetration. They tend to have good acoustical properties and show high fire ratings. However, they suffer from the drawback of being slow setting and this has acted as a deterrent to their use in speedy construction.

To overcome these difficulties, a rapid setting lime plaster has been developed by the Central Building Research Institute (CBRI), Roorkee. This is endowed with all the desirable properties of lime, yet sets faster and develops good early strength.

The plaster starts setting in about 2 hours and becomes fairly hard in about 24 hourrs, thus providing sufficient working time and at the same time ensuring speed of construction. It develops adequate strength in 28 days. The plaster can be mixed with two to three parts of sand before application. It is applied as a single coat plaster but may be applied in two coats if better finish is desired. It can take smooth finish. The plaster is specially suited for plastering internal surfaces but may also be used externally as well in situations where the incidence of rainfall is not high. It adheres well with the backround. Its application is easy and does not involve any special technique. It is economical. The plaster itself is white in colour and acquires the colour of the admixture. Judicious addition of suitable colouring materials can result in the production of numerous shades; otherwise the plaster can give white finish.

With the ever-incresing demand for plastering materials and perennial shortage of traditional building materials, the plaster appears to have good potentialities.

The plaster has been thoroughly tested in the laboratory. Besides, it has been tried in the field on certain buildings. Its performance has been found to be satisfactory.

The estimated capital investment for plant to produce 5 tonnes per day is Rs. 110,000 and the production cost is about Rs. 175 per tonne.

Further particulars may be obtained from : The Managing Director, National Research Development Corporation of India, 61 Ring Road, Lajpat Nagar III, New Delhi 110024.

THREAD COUNTER

The Central Scientific Instruments Organisation (CSIO), Chandigarh, has designed and developed a thread counter (microscopic type). This instrument is used for determining the density of warp and weft yarns in single-weave cloths, not raised or filled and the density can be determined in a length of 5 mm or less.

For determining the yarn density in cloth, this apparatus provides an easy and rapid method of counting warp and weft yarns per unit length. The apparatus is also suitable for testing the uneveness of cloth. Cloth of any size can be tested by means of trans-illuminated light from below or by controlled incident light from above.

Microscopic technique is used to determine the cloth density. Cloth of low density is viewed through a microscope with the help of trans-illuminated light from above and examined in reflected light.

The apparatus has five main parts : (i) cloth trans-illuminating box, (ii) cloth moving device, (iii) top plate, (iv) microscope carriage and (v) microscope.

The cloth trans-illuminating box is an aluminium alloy casting with a well-ventilated bottom, housing two milky white bulbs of 25/15W, 220/230 V. Two transformers are also provided inside the box to feed the two incident spot lights of 6 V, fitted on the clamping plate. The top of the box has a glass-covered window of 76 × 25 mm size and a sliding pocket to insert a coloured glass filter when there is need for stressing the contrast between weak and partly washed-out colours. On the front panel of the box, four light switches are provided to work the two 220 V and two 6 V bulbs.

At the top of the illuminating box is attached the cloth moving device, which can move the sample cloth strip to and fro for inspection. This is done by rotating the two knobs fitted on the device. A sliding pocket for filter glass is also fitted below the device, which can hold a glass plate of required shade for viewing the sample in coloured light.

The case aluminium top plate has a rectangular window of the same size, located just above the one as provided on the illuminating box, having a glass plate graticule (0-50 mm scale). The sample cloth is held between the two glass plates and viewed through the microscope. The upper side of the plate has two incident light sources fitted with potentiometers to control the intensity of light, which is done by turning the knobs in the required direction. The light sources are adjustable to very oblique angles to emphasize the roughness of the sample surface and eliminate shadow effect. Where the weave of the sample material is fairly open, it will often be found useful to supplement top illumination with light from bottom. However, the bottom light alone will be found suitable for medium weave cloth.

The microscope carriage is moved along the glass scale, fixed on a guide device, attached to a screw spindle of 1 mm pitch. The turning knobs have a graduated drum with 20 divisions on its circumference so that 1/20 mm could be read with convenience. In addition to glass scale, a metal scale, 0-50 mm, is provided on the carriage for countercheck. There is an arrangement for preventing back-lesh error with the help of an adjusting screw provided under a cap on the front side of the carriage.

The microscope is of standard tube length of 160 mm and embodies standard size eye-pieces of 5 × and 10 × with crosslines and a double objective of 3 × having RMS threads. Magnifications of 15 × and 30 × are obtainable with the combination of optics provided. Focusing is done by rack and-pinion motion. Counting of the yarn is conveniently done on a full scale graticuly covering 50 mm cloth length.

The specifications of the instrument are as follows :

Magnification : 15 ×, 30
Test length : 0—50 mm
Mains : 220—230 V ac, 50—60 c/s
Power comsumption : 25/40 W
Dimension of trans-illuminating box : 23×18×15 cm
Lamp : 25—40 W (milky)
Spot light : 6 V
Overall size : 300 × 180 × 360 mm.

The demand for the instrument is at present being met by import. The instrument will be required by textile testing laboratories and research institutes concerned with the development of textiles.

The laboratory has designed, developed and fabricated a prototype which has been working satisfactorily.

Plant and machinery needed for the fabrication of the unit are available indigenously. It will be uneconomical to take up this process independently, but any firm having a mechanical workshop with the normal facilities of metal sheet/works, drilling, turning milling and surface-finishing operation and on optical workshop for the production of optical components like lenses and mirrors, can take up the process.

Further particulars may be obtained from : The Managing Director, National Research Development Corporation of India, 61 Ring Road, Lajpat Nagar III, New Delhi-110024.

TELEVISION INDUSTRY
AN OUTLOOK

Television technology in India is rapidly coming of age. In fact, the television industry has carved out a significant place for itself through its contribution in modernising the country's communication system. India is, today, perhaps, the only developing country in the world which has developed its television Industry from is own resources and joined the select group of those few nations which have sound infrastructure in this highly sophisticated area of manufacture.

With the backing of highly skilled technical personnel and required technical know-how, the industry is rapidly progressing towards greater indigenisation. Within a short span of a little over a decade, the industry's infrastructure comprises as many as 78 units including 68 units in the small scale sector and 10 units in the organised sector (1973). The approved capacity in both these sectors is of the order of 304,900 sets per annum (1973-74). Of this, the small scale sector accounts for 199,900 sets while the share of organised sector is of the order of 105,000 sets. At present, about 20 units, both in the organised sector (including State Industrial Development Corporations) and the small scale sector, are engaged in the production of TV sets. A few more have commenced production on a limited scale.

During 1973, production of television sets was of the order of about 75,000 numbers. Of these, about 47,000 were manufactured by the units in the small scale sector and 28,000 sets by units in the organised sector. (The units in the organised sector had achieved a production of 14,760 numbers in 1972).

In the year 1974, the production is estimated to have gone up to 102,000 numbers. The significant feature of television production in India is that the qualitiative standard of the sets produced in both the sectors is upto the mark. A number of new models based on know-how developed by the units themselves are being introduced ever year into markets.

The Department of Electronics is entrusted to review the progress of these units which are likely to commence manufacture of TV sets shortly. The Department is also intended to be instrumental in solving the difficulties faced by the units at production level as also other problems related to the manufacture. These measures, would help improve production to required level.

Notwithstanding considerable progress achieved in the output field, a number of required TV test instruments are to be procured from abroad. The Department of Electronics is assisting the industry in importing these instruments from Rupee Payment Areas rather than from the Hard Currency Areas to save foreign exchange. The State Trading Corporation (STC) undertakes distribution of these instruments to TV manufacturers.

The industry is also striving hard to develop a sound infrastructure for manufacture of TV components indigenously which are presently being imported from abroad. This will help the industry to reduce the import content to the minimum level possible. Already, a number of schemes to undertake manufacture of imported components, electronic tuners, TV picture tubes etc. are being implemented. These measures are expected to help the industry to cut down imports drastically.

Effective steps are also being taken by the industry to expand the capacity of the existing units for improved production. Already, some units which have demonstrated their capability to produce sets of standard quality to the extent of their approved capacity, have been allowed to double their approved capacity from 2500 sets to 5000 sets per annum.

The production of television sets during the Fifth Five Year Plan (1974-79) is estimated to attain a level of Rs. 1150 million. Of this, the respective shares of private and public sectors are estimated at Rs. 920 million and Rs. 230 million by the terminal year of the Plan (1978-79).

In recent years, the television Industry has entered the field of exports also, though on a modest scale. During 1972-73, the industry supplied television sets, television receiver parts and television cameras to Bangladesh, Libya, USA, Singapore, Hong Kong, Denmark and Sri Lanka while in the following year television receiver parts, television transmission apparatus parts, television cameras etc., were supplied to Netherlands, USA, UK, Hong Kong, Arab Republic of Egypt and Nepal.

Television network in India caters to a population of 25.70 million and an area of 83,000 square miles. The TV network today is comprised of television centres at Sri Nagar in Jammu and Kashmir (opened on January 26, 1973), Amritsar in Punjab (on September 29,1973) and a relay centre at Poona (2nd October, 1973). Delhi and Bombay Centres became operational in 1959 and 1972, respectively.

By the end of 1973-74, the number of viewers reached 50,000 from 36,000 in the preceding year. Taking into account the steady growth in the living standard of common man in India, the domestic demand for television sets is expected to go up. Very soon, some television centres would become operational and consequently the number of viewers would also go up. The domestic demand may also increase. As such, the television industry has to undertake the responsibility to satisfy the growing requirements of home users as well as the quality conscious buyers abroad. ☐

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HMT AND EXPORT SUCCESS

A premier public sector unit, M/s. Hindustan Machine Tools Ltd., Bangalore, is reported to have recently concluded an agreement with Machine Tools Works Buehrie and Co., Oerlikon of Switzerland for export of engineering equipment worth Rs. 4.5 million francs. Their total exports during 1973-74 amounted to Rs. 25.20 million recording a sharp increase of 54 per cent over the exports during the preceding year. Sales turnover during the year increased by 22 per cent to Rs. 430.60 million and is expected to attain a level of about Rs. 1000 million in the next three years.

The overseas supplies of HMT are directed to about 40 countries of the world including even sophisticated economies, such as, U.S.A., U.K., Federal Republic of Germany, Netherlands, Australia and New Zealand.

Besides physical exports, the Bangalore firm is also concentrating on supply of technical know-how and consultancy services. It has already given technical assistance for setting up of machine tool units in Sri Lanka and Philippines and is planning to conclude a similar arrangement with South Korea. It is also setting up a subsidiary, named 'HMT International' to look after its international trade.

As a part of its expansion and diversification programme, HMT would shortly begin manufacture of a new set of numerically controlled machine tools which have substantial export prospect. Technically known as NC, such highly sophisticated machines have numerical controls which enabled them to perform automatically a series of operations.

Though machine tools continue to be the main product line of HMT, in the context of product diversification, its Pinjore unit has started turning out tractors while the Kalamassery unit has entered the printing machinery business. The watch factory at Sri Nagar is also expected to be commissioned early next year. The production of die-casting and plastic injection moulding machines in the Bangalore unit was being stepped up to reach optimum capacity. The Hyderabad unit of the company proposes to manufacture lamp - making machinery and GLS lamps. Horological machinery with swiss type sliding head - stock automatics is being made in Bangalore.

Currently, there are 107 units with an installed capacity of Rs. 750 million, engaged in manufacture of machine tools in India. The total licensed capacity is of the order of Rs. 1020 million. Additional capacity covered by letters of intent comes to about Rs. 340 million. Actual production in 1973-74 was of the order of Rs. 630 million against Rs. 527.50 million in the preceding year. The production profile of the industry covers a wide range including special purpose machine tools of unit head type. Besides the units in the large scale sector, a number of small scale units are manufacturing general prupose machine tools.

BIG ORDER FOR IRON ORE PELLETS

An Indian firm, M/s. Chowgules and Company Pvt. Ltd., Goa is understood to have concluded a major deal with Japanese steel Mills for export of 19 million tonnes of iron - ore pellets valued at Rs. 4000 million.

The supply in fulfilment of the order will be at the rate of 1.8 million tonnes, phased over a period of about 10 years, commencing from October, 1977. It will mean an annual foreign exchange earning of Rs. 400 million during the period.

Interestingly, the contract provides for escalation in prices. Accordingly, the price of the pellets to be supplied could be renegotiated every two years. The Japanese importers have also agreed to pay a higher price if the quality proves superior to the specifications stipulated in the contract. As it is, the importers have laid down very stringent quality specifications as pellets are now being fed to giant size blast furnaces having capacities of 10,000 tonnes hot metal per day. The development of pelletisation plants was important for the country since exports of minerals in this form earned much more than those of iron ore fines.

The existing pellets plant of M/s. Chowgules at Goa has been in production since 1967. It has a production capacity of 550,000 tonnes annually.

For executing the above contract, a new pelletisation plant will be set up near Mormugao harbour. Estimated to cost about Rs. 420 million, the plant will have an annual capacity of 1.8 million tonnes. It will be set up by a new company to be called Chowgule Metal Industries Ltd. About 45 per cent of the plant and equipment for the new plant will be procured indigenously while the balance will be supplied by Austria. The new plant is expected to go into commercial production during 1977 by which time new mechanical ore handling facilities are likely to be set up at Mormugao port, facilitating quick handling and shipping of the pellets.

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The Goa firm has been exporting 555,000 tonnes of pellets a year to Japan from their first pelletisation plant in Goa for the past seven years. Besides, they export a sizeable quantity of iron ore lumps and fines to Japan. Recently, they secured a contract for supply of low grade iron lumps from Bethlehem Steel Corporation in the USA.

The company has also running contracts for the supply of similar grade of ore to Belgium and West Germany and it hopes to develop the West European market extensively by supplying homogenous qualities of the ore.

India's total foreign exchange earning of iron ore and concentrates was of the order of Rs. 1328 million in 1973-74 as against Rs. 1098 million in the preceding year. Japan is the foremost buyer of this ore from India, accounting for about 80 per cent of its exports. Other important importers include Czechoslovakia, Rumania, Poland, Belgium and Hungary.

Total production of the ore in India was 35.20 million tonnes in 1972. Of this, Goan production was 11.37 million tonnes. Indigenous steel industry's annual requirement of the ore is around 16.5 million tonnes. Hence the country has sufficient surplus for export.

EXPORT PERFORMANCE AND POTENTIAL

INDO-RUMANIAN TRADE RELATIONS

As with other socialist countries, India's trade with Rumania has grown very fast. From a mere Rs. 75.5 million in 1963 it rose to Rs. 280.35 million in 1973. India had a favourable balance of trade of the value of Rs. 47.65 million in the same year (1973). The average growth rate in trade turnover during the last ten years works out to 20.5 per cent, while in exports it comes to 11 per cent per annum.

India's major items of exports to Rumania are iron ore, jute manufactures, deoiled cakes, tanned and semi-tanned hides and skins and coffee. India's imports from Rumania on the other hand mostly consist of fertilisers, steel, oil prospecting and drilling equipment, organic and inorganic chemicals, pharmaceutical products and drug intermediates, machinery and equipment and capital goods for various industries including chemical, fertilizer plant and refineries. The hard core of the Indo-Rumanian trade consists of import of fertilizers, steel and petroleum products (principally fertilizers) from Rumania and export of iron ore from India to that country.

The traditional items have formed over 85 per cent of Rumanian imports from India. These constitute such items as cotton textiles, cotton yarn, jute bags, coir products, engineering goods, etc.

The first meeting of the Indo-Rumanian Joint Commission on Economic, Technical and Scientific Cooperation which was held recently in Bucharest is significant in the sense that the Indo-Rumanian trade was reviewed with satisfaction with the feeling that the volume of trade might amount to over Rs. 600 million in 1974. It was agreed to make efforts to facilitate further development and diversification so that at the end of 1975 the trade turnover could reach Rs. 900 million and the volume could be doubled by 1980 as compared to 1974. There was healthy exchange of views with regard to possibilities of conculding long-term arrangements in order to ensure the exchange of commodities of mutual interest to the two countries. These will include iron ore, chemical fertilisers, equipment for oil fields and refineries as well as other products of machine building, chemical and metal working industries.

EXPORTS TO EUROPEAN ECONOMIC COMMUNITY GO UP

During 1973-74 Indian Exports to European Economic Community have done better than ever before, according to the representatives of E E C. countries in India. India's exports to the region amounted to Rs. 5920 million as against Rs. 4060 million in 1972-73. In fact, about 25 per cent of India's total worldwide exports was absorbed by the Community.

Although India still has an adverse balance of trade with EEC as a whole, the deficit appears to be declining and India seems to be moving towards a balance of trade with the community as a whole. With several member countries of the Community, India already has a favourable balance of trade. These include the United Kingdom, Italy, the Netherlands, Denmark and the Ireland.

The two-way trade between India and EEC has registered an increase of 69 per cent in value between 1970-71 and 1972-73, while Indian exports to the Community have increased by 52 per cent. According to EEC representatives in India, this increase at constant price level was about 27 per cent, if one "takes into account the price rise registered by Indian products for the same period". The trend continued in 1973-74. It is understood that India's rapidly growing exports to the Community have contributed appreciably to the record increase of 44.5 per cent in India's total export trade during the first four months of the current financial year.

In the context of India's trade with the Community, a Commercial Cooperation Agreement between India and the Community has come into force from April 1, 1974. It has been evolved as an instrument to establish a viable trading relationship based on the concept of comparative advantage and mutual benefit. Under this, an Indo-EEC Joint Commission has come into being which held its first meeting in Brussels in May, 1974. The second meeting is likely to be held in Delhi shortly.

PLASTIC MATERIALS BRING MORE FOREIGN EXCHANGE

Registering over 50 per cent increase over the exports during 1972-73, India's overseas sales of plastic materials and allied items brought in more foreign exchange in the following year. The exports during 1973-74 secured Rs. 15.55 million against Rs. 10 25 million in 1972-73.

During 1973-74, the category of polymerisation and copolymerisation products and polythelene, polystrene and polyvinyl etc. constituted the principal area of sizeable export expansion. As against Rs. 3.85 million in 1972-73, the exports rose to Rs. 8.85 million in the year under review. A variety of items were supplied overseas in this category during the year. These included polyethelene resin compound (low pressure), acrylic resin, polystrene moulding powder, polyvinyl chloride resin (by emulsion and suspension methods), sheet polythelene, film-sheet ribbon vinyl plastic and other primary forms. Japan, Netherlands, Federal Republic of Germany, New Zealand, Thailand, Philippines, Singapore, Tanzania Republic, Hong Kong, Mauritius and Iran were the principal importers.

Regenerated cellulose chemicals and derivatives, the next important group active in exports, earned Rs. 2.15 million. However, the export earnings of the group were lower as compared to the value in 1972-73 at Rs. 5.30 million. Cellophane was the main export item during the year which alone earned Rs. 2 million. Indonesia, Singapore, Hong Kong, Philippines and Thailand were the main markets.

Besides these important categories, phenol and urea formaledehyde moulding powders, nylon moulding powders, melamine formaldehyde resin and formaldehyde moulding powders etc. secured Rs. 2 million (1973-74) against only Rs. 0.30 million (1972-73) while other artificial resin plastic material fetched over Rs. 2.40 million against only Rs. 0.75 million.

SIZEABLE OVERSEAS DEMAND FOR INDIAN WIRE PRODUCTS

India's export trade in wire products and fencing grills (excluding electric) netted foreign exchange worth Rs. 37.85 million in 1973-74 as compared to Rs. 21.30 million in 1972-73. The export improvement during the year was of the oader of over 80 percent. The export value during 1971-72 and 1970-71 was of the order of Rs. 24.50 million and Rs. 24.65 million respectively.

During the year, wire cables, ropes and similar articles (not insulated) constituted the major group of export dynamism having secured the bulk of fereign exchange valued at Rs. 25.60 million, accounting for about 68 per cent of the total export earning. This was also more than the total export value of this group in the preceding year at Rs. 16.60 million. The next significant group active in exports was that of gauze netting grill fencing of wire. It brought in Rs. 7.27 million (1973-74) against Rs. 4.30 million (1972-73) while the export earnings of iron and steel wire of fencing type secured as much as Rs. 4.95 million as compared to only Rs. 0.30 million in the preceding year.

In the group of wire cables, ropes and similar articles, galvanised wire ropes of iron and steel secured Rs. 13.75 million while black wire of iron and steel earned Rs. 10.52 million. USSR, USA, Singapore, Hong Kong, Thailand, Philippines, Bangladesh and Malaysia were the principal buyers of both the categories of wire ropes.

In the category of gauze netting grill fencing wire netting of iron and steel, wire gauze of iron and steel, wire gauze netting of copper and alloy and of aluminium and alloy were supplied to a large number of overseas markets. Saudi Arabia, Dubai, Muscat, Abu Dhabi, Iran, Kuwait, Qatar and Thailand were the leading buyers.

Iron and steel wire of fencing type were imported by about a dozen markets overseas amongst which USA, Muscat, Abu Dhabi, Dubai and Australia were prominent.

SPICES EXPORT FARNS MORE

Exports of spices from India during April-May 1974 amounted to 9194 tonnes valued at Rs. 97.50 million as against 8621 tonnes valued at Rs. 64.50 million in April-May 1973, registering increase both in quantity and value. Cardamom, Turmeric, Curry powder, Celery seed, Fennel seed, Fenugreek seed and Cassia were the items which registered increase both in terms of quantity and earnings during April-May, 1974 compared with April-May 1973. Exports of pepper, Ginger, Cumin seed and Garlic have shown increase in earnings but decline in quantity while exports of Chillies, Coriander seed and Tejpat registered decline both in quantity and earnings during April-May 1974 compared to April-May 1973.

During the period under review in 1974-75, the variety-wise break-up of exports was : Pepper Rs. 51.15 million (3415 tonnes) and Rs. 38.90 million (5182 tonnes); Cardamom Rs. 19.40 million (260.70 tonnes) and Rs. 12.55 million (205 tonnes); Turmeric Rs. 8.47 million (1837.50 tonnes) and Rs. 2.37 million (731 tonnes); Ginger Rs. 6.25 million (893 tonnes) and Rs. 3.84 million (901 tonnes); Celery seed Rs. 3.70 million (649 tonnes) and Rs. 1.44 million (341 tonnes) Cumin seed Rs. 2.40 million (241.35 tonnes) and Rs. 2.15 million (478.63 tonnes); Cassia Rs. 1.70 million (270.40 tonnes) and Rs. 0.80 million (141.48 tonnes) and Garlic Rs. 0.40 million (41 tonnes) and Rs. 0.10 million (50.27 tonnes).

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

GROWTH OF SERICULTURE INDUSTRY

The importance of sericulture in India cannot be overemphasised. It is an activity with a very favourable input output ratio. The employment generated by this industry is almost wholly in the rural and the tribal areas whose uplifc is one of the primary concerns of the Government. As it does not call for massive capital inputs, building and machinery, and as it tends to be exploited by small and marginal farmers and leads to a sharp increase in their farm income, sericulture is an ideal tool for improving the rural economy, especially of the backward and tribal areas.

The sericiulture industry has recorded spectacular progress in the past 25 years. The production of raw silk has gone up by 2½ times, from 1225 tonnes in 1949 to 3075 tonnes in 1973-74. This includes 2400 tonnes of mulberry silk and 675 tonnes of non-mulberry silk and accounts for an average annual increase of 10 per cent. Production of silk fabrics rose to over 45 million sq. metres last year.

Indian silk is getting popular in foreign markets and this is very well reflected by the fact that during the last 25 years there has been 36-fold increase in the export of Indian silk. The foreign exchange earning of silk went up from Rs. 4.15 million in 1949 to Rs. 14.7 million in 1973-74. Imports of silk were drastically curtailed from Rs. 28.3 million in 1949 to Rs. 1.55 million last year.

During the Fifth Plan, it is proposed to increase the annual production of mulberry and non-mulberry silk from the current level of 3075 to 4645 tonnes involving an investment of Rs. 336.40 million.

The increase in production in mulberry silk will be about 46 per cent while major developments will take place in respect of non-mulberry silks like Tasar, Eri and Muga. These objectives are expected to be achieved through the extension of mulberry cultivation by adoption of mixed cropping techniques, increased exploitation of oak trees in the sub-Himalayan region and through stepping up productivity at all stages in this industry.

Research has received due attention in the field of sericulture. The Central Silk Board has set up two research institutions for the mulberry sector, one each at Mysore and Berhampur and one station each for non-mulberry sector at Ranchi and Titabar. There are also four regional stations at Kalimpong, Imphal, Bhimtal and Batote.

In the recent past, the pace of research has been quickened and several results of far-reaching importance have been achieved. A new technique of rearing mulberry silk worms has been evolved by the Central Sericultural Research and Training Institute, Mysore.

This has made possible the raising of bivoltine cucoons in Karnataka. A package of practices for mulberry cultivation has also been evolved. This has shown the way to increase mulberry leaf yield from 4,000 kg. to 9,000 kg. per hectare under rainfed conditions and from 15,000 kg. to 30,000 kg. per hectare under irrigated conditions.

The Central Silk Board has organised a post-graduate diploma course in Sericulture at the Central Sericultural Research and Training Institute, Mysore. The Board also organises every year a six-week refresher course for the inservice officers of the Sericulture Department of the States.

With these measures, the sericulture industry is poised for a more spectacular growth in the coming years.

ELECTRIC FAN INDUSTRY
A SPOTLIGHT

From a position of a net importer of electric fans two decades back, India emerged not only as a competent manufacturer of a variety of electric fans but also occupied a significant position as an exporter of quality fans among the co-developing economies in the world.

Today, the installed capacity of the electric fan industry is of the order of 3 million numbers per annum which is shared by in all 17 units in the line, both in large scale and small scale sectors. The average production during the preceding three years (1971-1973) stands at about 21 million numbers. In fact, it would have been much more but for certain production constraints, such as, industrial disputes, inadequate power supply etc. However, the present production is sufficient to meet the home demand and, therefore, imports of fans are completely banned.

It is estimated that the home demand by the end of the Fifth Plan would reach 3.75 million fans for general utility purposes. These are mainly used in residential premises, offices, buildings and fall in the category of ceiling fans, table fans, pedestal fans etc. At present, there exists only a limited scope for creating further capacity in this area of manufacture. However, taking into account the growing overseas demand for table fans with modern design and new improvements, proposals for manufacture of such fans for export may be considered.

The electric fan industry is fully equipped with the technical know-how required for manufacture of fans of almost all types. Plant and equipment required for production are also available indigenously while main raw materials such as, winding wires, dynamo grade steel, insulation material, ball bearings etc., are available indigenously.

The industry has already entered into the field of exports. During 1973-74, the industry earned foreign exchange at a value of Rs. 20.30 million. In fact, the exports in the preceding two years were more at Rs. 25.40 million and Rs. 15.60 million.

During 1973-74, in all 185,572 complete fans of four types were supplied abroad. The export range included ceiling fans (Rs. 17.53 million), table fans (Rs. 1.85 million), pedestal fans (Rs. 0.90 million) and Railway carriage fans. Kuwait, Iraq, Nigeria and Australia were the major buyers of ceiling fans while Poland was the largest buyer of table fans, followed by Zambia, Singapore, Nigeria and Muscat. Iraq constituted the principal importer of pedestal fans among others while Bahrein Islands was the sole purchaser of Railway carriage fans.

PRODUCTION TREND IN IRON CASTINGS

Malleable iron castings are extensively required for the manufacture of automobile components. These are also used as components of railway rolling stocks, heavy earth moving equipment, textile machinery etc. Insulators hard-ware and pipe fittings are also made out of malleable iron.

There are at present 12 units manufacturing malleable castings with a total installed capacity of 29,000 tonnes. The production is of the order of 16,000 tonnes.

The demand for malleable iron castings has not been assessed. However, with the expansion in the engineering industries, particularly those mentioned above, the demand for malleable iron castings will increase considerably. Even at present, there is shortage of malleable iron castings. There exists, therefore, scope for establishment of additional capacity. Plant and machinery are mostly available from indigenous sources.

'SG Iron Casting' is a versatile engineering material developed a decade ago. By virtue of their adaptability in a number of cases, they replace, to a large extent, non-ferrous and forged steel components.

There are 10 units manufacturing SG iron castings in the country with a total installed capacity of 7800 tonnes. Production has been of the order of 1450 tonnes.

No assessment of demand for SG iron casting has been made. In addition to a sizeable demand from Railways, other important industries requiring substantial quantities of SG iron castings are automobile, tractor, earth moving equipment etc. Taking into consideration the growth of the above industries during the Fifth Plan and having regard to the increased demand for SG iron castings for replacing expensive components made of non-ferrous material and forgings, the field offers good potential for growth and scope for fresh capacity. Plant and machinery are mostly available indigenously.

MAN-MADE FIBRES - PRODUCTION REVIEW

Despite their late entry into India's production range of non-traditional items, man-made fibres have assumed significance owing to their growing utility as base - items for manufacture of finished products in the areas of textiles and automobile tyres.

In India, the production range of man-made fibres (cellulosic types) includes viscose rayon staple fibre, viscose rayon filament yarn and viscose rayon tyre cord while those of synthetic types are nylon filament yarn, nylon tyre cord and other industrial yarns, polyester staple fibre and polyester filament and acrylic fibre.

Substantial progress is being achieved in production of man-made fibres in recent years. During 1973-74, output of viscose rayon staple fibre at 66,000 tonnes was nearly 100 percent of the installed capacity of 67,000 tonnes inclusive of approved additional capacity of 43,000 tonnes of two units in the line. Similarly, the production of viscose filament yarn was 37,00 tonnes during the year against the installed capacity of 39,100 tonnes of 7 units while the output of viscose rayon tyre cord was 17,000 tonnes against the capacity of 21,000 tonnes shared by 3 units.

There exists a considerable scope for further expanding the capacity in the case of viscose rayon staple fibre. The capacity target for the Fifth Five Year Plan (1974-49) has been fixed at 145,000 tonnes. In the field of viscose rayon fialment yarn manufacture also, there is considerable scope for licensing additional capacity to achieve an annual output target of 55,000 tonnes during the Fifth Plan. In respect of viscose rayon tyre cord the Fifth Plan aims at achieving a capacity of 25,000 tonnes per annum by 1978-79.

Nylon filament yarn is primarily used in manufacture of textiles. During 1973, its production was 11,350 tonnes against an installed capacity of 15,376 tonnes. Recently, an additional capacity to the tune of 34,714 tonnes has been approved. The draft Fifth Plan target aims at achieving a combined capacity and production of 19,000 tonnes by 1978-79. There is no scope for licensing further capacity during 1974-75. Nylon type cord is used in the manufacture of automobile tyre. The installed capacity in this field is of the order of 3790 tonnes while the production was 2188 tonnes. An additional capacity of 6400 tonnes per annum has been approved recently and most of the capacity is likely to materialise during the Fifth Plan. In the area of polyester staple fibre and polyester filament, the installed capacity is of the order of 20,554 tonnes (1973) and the actual production was 15,100 tonnes. In this line of manufacture also an additional capacity of 16,000 tonnes has been approved taking into consideration their growing requirement in the textile sector. Apart from this, a public sector project with a capacity of 30,000 tonnes per annum is also proposed to be set up. The Fifth Plan target in respect of capacity is fixed at 59,000 tonnes per annum by 1978-79.

Acrylic fibre is extensively used as a substitute for wool in the manufacture of textiles. The licensed capacity in this field is 16,000 tonnes but it is to be installed yet. Acrylonitrile, the main raw material used in the production of the fibre is based on Naphtha and is in short supply presently. The Fifth Plan target aims at achieving a capacity of 16,000 tonnes per annum by 1978-79. The total capacity licensed for the main raw material - Acrylonitrile is of the order of 24,000 tonnes.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

SODIUM CHLORATE

National Research Development Corporation of India offers technical know-how for the manufacture of Sodium, Chlorate. This chemical, as a source for chlorine dioxide, is used for bleaching of paper pulp, production of other chemicals, as a weed killer, defoliant for cotton and soyabeans, an oxidising agent in ore processing, particularly in the case of uranium ores, etc.

The existing process for the production of sodium chlorate has a number of disadvantages in that it is more time consuming (it involves two-stage electrolysis) and is also costlier as there is loss due to disintegration of platinum and graphite anodes.

A new process developed by Central Electro-Chemical Research Institute, Karaikudi, eliminates the disadvantages in the existing process. It is a single stage electrolysis process in which lead dioxide anodes are used.

The present annual production of the chemical is about 1500 tonnes and the balance requirment is being met through imports. Its consumption in the next few years is expected to rise to more than 7000 tonnes per annum due to increasing demand from paper and textile industry. Most of the raw materials, machinery and equipment required according to the new process are indigenously available. An estimated investment of Rs. million 3 is required for setting up a plant with an aunual production of 650 tonnes.

DEVICE FOR INTRA-OVERIAN INJECTION IN LARGE ANIMALS

NRDC of India offers technical know-how for the manufacture of a device for permanent sterilization of large animals. The increasing population of useless (scrub) cattle is posing a big problem due to shortage of cattle feed and fodder. It is also a major hurdle in the way of developing cattle industry and increasing milk production in the country.

Developed by the Central Drug Research Institute, Lucknow, the device is capable of delivering drugs and chemicals (in liquid form) directly into deep seated organs like ovaries of large female animals. It provides an arrangement for puncturing the vagina wall or skin to facilitate the approach of the injection needle to the ovary, without causing injury and bleeding to the vaginal or other organs. Further the injection needle can be fixed at a required depth till the injection is completed. The depth of penetration of the injection needle can be adjusted to suit ovaries of different sizes. After the injection is over, the injection needle retracts automatically thereby protecting its tip and avoiding injury to other organs of the body.

This method of sterilization of large animals obviates the necessity for removing ovaries through a major operation. Besides sterilization, the device can also be used for removal of toric or abnormal fluids, sometimes found in diseased deep-seated internal genital organs and also to inject medicines for purposes of curing.

With the development of this device, programmes for mass sterilization of useless animals for arresting their multiplication can be launched

PROBE FOR ULTRASONIC THERAPY

This is an instrument used for converting radio frequency energy into ultrasonic energy at the same frequency. The conversion is achieved by using Piezoelectric transducers. The ultrasonic energy so produced is employed in the field of medicine and biology, particularly for the rapeutical applications. Diseases like ulcers, sinusitis and artharitis etc. can be effectively cured with ultrasonic energy.

Developed at the Regional Research Laboratory, Bhubaneshwar, the new probe is an improved version of similar probes in use. It uses PZT-5 transducer in place of barium titanate transducer which enables its working at temperature upto 250°C as against 150°C in the case of existing ones. Further a frequency fluctuation of upto 5 per cent does not effect the performance of the transducer.

The components as well as the working machinery required for the production of this probe is availabe indigenously and an investment of Rs. 90,000 approximately is required for a unit with an annual production of 600 probes.

PUNCH THROUGH INJECTION TRANSIT TIME (PITT)

A 'Punch through Injection Transit Time' (PITT) microwave diode has been fabricated and tested at the Central Electronic Research Institute Pilani. An oscillator has been made using 7 mm coaxial line with three tuning slugs. CW oscillations were obtained at X-band, giving typical microwave power of the order of 50 UW with an efficienty of 0.4 per cent. Further work is in progress to improve upon the device performance.

The above device (i.e. PITT) consists of two junctions connected back to back. One is heavily doped on either side to produce desired injection efficiency of the injected carriers under forward bias conditions. The other one punches through on the othe side to provide a high field region for the drift of injected carriers at the saturation limited velocity. Injection at the forward biased junction, combined with the finite transit time across the drift space, produces negative resistance over a band of microwave frequencies. The injecties properties of the first junction and the drift space of the second junction can be optimised to produce maximum output power at the desired frequency.

These are relatively low power devices. But the main advantage with these devices lies in the extremely low noise associated with them. This low noise is a limiting factor.

INDIA'S IMPORT TRADE IN 1973-74

While India's exports during 1973-74 earned increased foreign exchange valued at Rs. 24,782 million as against Rs. 19,644 million in 1972-73, its import bill during the year was also higher at Rs. 29,164 million in comparsion to Rs. 18,674 million in the preceding year.

The higher imports in 1973-74 were in respect of a number of product groups and commodities. However, wheat, petroleum and petroleum products and fertilizers, were the major items which were responsible for increase in imports. In fact, the country would have enjoyed a favourable balance of trade but for sizeable increase in the import of these products.

Accounting for nearly 20 per cent of the total import bill during the year, the overseas purchases of food and live animals increased to Rs. 5469 million from Rs. 1597 million in 1972-73. In this group, the intake of wheat alone registered seven-fold increase to Rs. 3461 million from Rs. 481 million on account of recurring drought conditions in the country. Similarly the import of cereals, other than wheat, rice, barley and maize was more at Rs. 1111 million against Rs. 114 million. However, the import bill on account of rice was less at Rs. 64 million against Rs. 107 million. Cereal preparations including those made from flour and starch of fruits and vegetables were also lower— Rs. 69 million against Rs. 99 million.

Imports of mineral fuel, lubricants and related materials rose to Rs. 5606 million from Rs. 2042 million in 1972-73. Of this, purchases of petroleum and petroleum products more than doubled to Rs. 5603 million from Rs, 2040 million. Petroleum crude was imported at a value of Rs. 4171 million against Rs. 1448 million. Petroleum products were absorbed at Rs. 1432 million in comparison to Rs. 592 million in 1972-73.

Among chemicals which constitute a significant segment of India's import bill, manufactured fertilizers imports amounted to Rs. 16,220 million as compared to only Rs. 962 million, obviously owing to the growing demand of the country's agricultural sector. Chemical elements and compound were imported at a value of Rs. 1053 million against Rs. 914 million. The outgo of foreign exchange on purchase of dying, tanning and colouring materials was also more at Rs. 103 million against Rs. 91 million. In this category, the increase was, however, registered mostly in respect of pigments, paints, varnishes and related materials (Rs. 25 million against Rs. 12 million) and synthetic organic dyestuff, natural indigo and colour lakes (Rs. 37 million against Rs. 30 million). But purchases of dying and tanning extracts and synthetic tanning material came down to Rs. 40 million from Rs. 47 million. Intake of medicinal and pharmaceutical products was also higher. These were bought at Rs. 264 million against Rs. 232 million. The overall expenditure on import of essential oils and perfume materials including toilet, polishing and cleansing preparations also went up to Rs. 32 million from Rs. 28 million. Similarly, plastic materials, regenerated cellulose and artificial resins accounted for an outgo of Rs. 152 million compared to Rs. 119 million in 1972-73. The total import bill on account of chemicals was of the order of Rs. 3516 million in comparison to Rs. 2588 million.

Animal and vegetable oils and fats were also quite a drain on the country's foreign exchange resources. Their import value increased to Rs. 649 million from Rs. 250 million. The increase was, however, mostly on account of larger imports of fixed vegetable oils and fats which were bought at Rs. 569 million compared to Rs. 155 million. Imports of animal oil and fats, however, revealed a decrease at Rs. 72 million from Rs. 90 million in 1972-73.

Interestingly, inspite of growing demand for electrical machinery, apparatus and appliances in the country, the import bill on account of these products was curtailed to Rs. 1241 million in 1973-74 from Rs. 1340 million in the preceding year. Electrical power machinery and switchgears were bought at Rs. 453 million against Rs. 527 million while purchases of equipment for distributing electricity were restricted to Rs. 135 million from Rs. 185 million. Similarly, telecommunication apparatus were bought at a reduced value of Rs. 232 million compared to Rs. 270 million. However, there was a marginal increase in import of electrical apparatus for medical purposes at Rs. 28 million compared to Rs. 23 million. For other electrical machinery and apparatus more foreign exchange was spent at Rs. 383 million in contrast to Rs. 329 million in the preceding year.

The import of machinery (other than electric), however, revealed an uptrend to Rs. 4164 million from Rs. 2980 million. Power generating machinery, agricultural machinery and equipment, office machines and machines for special industries were the major items leading to import increase. However, the purchases of metal working machinery as well as textile and leather machinery were reduced.

Testifying to the growing competence and production capacity of the transport equipment industry in the country which constitutes a vital sector of the Indian economy, the imports in this area were reduced to Rs. 884 million from Rs. 1001 million in 1972-73. Road motor vehicle imports were reduced to Rs. 305 million from Rs. 370 million. Even aircraft purchases were cut down to Rs. 267 million from Rs. 347 million. Imports of railway vehicles were maintained at the preceding year's level at Rs. 253 million. Road vehicles (mainly bicycles and parts), however, led to an increased expenditure of Rs. 5 million against Rs. 1 million and ships and boats to Rs. 53 million from Rs. 30 million.

Among miscellaneous manufactured articles, professional, scientific and controlling instruments as well as photographic and optical goods, watches and other clocks were imported at an increased value of Rs. 295 million compared to Rs. 279 million. The imports of scientific articles, optical measuring and controlling instruments and apparatus rose to Rs. 168 million from Rs. 154 million. Watches and clocks accounted for an autgo of Rs. 10 million against Rs. 8 million. Photographic and cinematographic supplies were, however, maintained at Rs. 115 million. For pearls and precious and semi precious stones, the country spent more—Rs. 740 million against Rs. 416 million. Glass and glassware imports increased to Rs. 41 million from Rs. 27 million. Purchases of glass amounted to Rs. 30 million against Rs. 18 million while glassware were bought at almost the preceding year's level.

Although, India has achieved considerable progress in the manufacture of a variety of iron and steel products, the import bill for these was slightly more on account of the growing requirements of the Indian industry. The overall import expenditure on this account totalled Rs. 2425 million against Rs. 2258 million. Universals, plates and sheets of steel were imported at Rs. 1430 million against Rs. 1409 million. Similarly tubes, pipes and fittings of iron and steel were bought at Rs. 281 million compared to Rs. 224 million; iron and steel bars, rods, angles shapes, sections Rs. 355 million compared to Rs. 308 million; hoops and strips Rs. 166 million compard to Rs. 129 million. However, ingots and other primary forms entailed reduced imports at Rs. 53 million against Rs. 94 million. Similarly, imports of pig iron and allied items were reduced to less than half at Rs. 4 million.

The import of crude materials (inedible except fuels) has been reduced to more than half at Rs. 837 million from Rs. 1900 million in 1972-73. The saving has been achieved inspite of increased imports of crude fertilizers and crude minerals, metalliferrous ores and metal scraps, wood, lumber and cork and crude rubber. This has been possible owing to reduced imports of hides and skins, oilseeds, nuts and kernels and pulp and waste paper and above all textile fibres and their waste.

Directionwise imports from the African Region were more or less constant. These amounted to Rs. 1673 million and Rs. 1650 million respectively in 1973-74 and 1972-73. However, imports from Zambia, Tanzania, Kenya, Ghana, Moroco, Zaire Republic and Congo Republic were higher. This was, however, more than made up by reduced imports from Sudan, ARE and Uganda.

North American region supplied more goods of Indian interest at Rs. 6088 million against Rs. 3425 million. Supplies from USA more than doubled to Rs. 4934 million from Rs. 2350 million while those from Canada totalled Rs. 1154 million against Rs. 1076 million.

Imports from Latin American region also rose to Rs. 558 million against Rs. 232 million. Argentina and Mexico were the leading suppliers.

ECAFE constitutes a very significant trade partner for India. Imports from this region rose to Rs. 6688 million from Rs. 4006 million. In this region, purchases from Iran increased to Rs. 2675 million against Rs. 1220 million. Japan was yet one more important market for Indian purchases. It supplied goods worth Rs. 2555 million compared to Rs. 1785 million in 1972-73. Malaysian goods were also bought in larger quantity at Rs. 321 million as compared to only Rs. 84 million. Imports from Nepal also rose to Rs. 130 million compared to Rs. 95 million. Bangladesh supplies to India also rose sharply to Rs. 168 million in comparison to only Rs. 35 million in the previous year. Imports from Singapore rose to more than three-fold—Rs. 97 million against Rs. 28 million. Imports from countries like Afghanistan, Burma, Republic of Korea were, however, compartively less.

Purchases from other Asian and Oceanian countries including a number of oil producing countries also registered increase at Rs. 2814 million compared to Rs. 843 million in 1972-73. Kuwait, Saudi Arabia, Iraq and Jordan were among the countries whose exports to India increased sharply.

East Europe which is an important trade partner of India supplied more at Rs. 3928 million compared to Rs. 2311 million. Imports from USSR rose to Rs. 2498 million against Rs. 1144 million while those from Poland were more at Rs. 457 million against Rs. 362 million. Purchases from GDR amounted to Rs. 248 million compared to Rs. 192 million. Czechoslovakia supplied more at Rs. 265 million in contrast to Rs. 159 million. Bulgarian exports to India were also up at Rs. 138 million compared to Rs. 95 million. Imports from Yugoslavia revealed a marginal increase at Rs. 78 million against Rs. 74 million. Imports from Rumania were maintained more or less at Rs. 135 million. Hungary was the only country in the region whose supplies to India were reduced to Rs. 108 million in 1973-74 in comparison to Rs. 149 million in the previous year.

The intake from the EEC countries including UK was more at Rs. 6831 million compared to Rs. 5764 million. All the member countries of the Community supplied more. Belgium supplied at Rs. 655 million against Rs. 510 million, France Rs. 698 million against Rs. 398 million, Federal Rebublic of Germany Rs. 1957 million against Rs. 1726 million, Italy Rs. 490 million against Rs. 359 million, Netherlands Rs. 543 million against Rs. 366 million, Denmark Rs. 39 million against Rs. 30 million and U.K. Rs. 2448 million against Rs. 2372 million.

Among EFTA countries, imports from Sweden increased to Rs 237 million against Rs. 189 million and those from Switzerland to Rs. 168 million against Rs. 116 million. Austria and Norway also supplied more to India. The total imports from the region amounted to Rs. 521 million in comparison to Rs. 387 million in 1972-73. ☐

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INDIAN BUSES FOR AFGHANISTAN

An Indian firm, M/s. Tata Engineering and Locomotive Company (TELCO), Bombay House, 24, Bruce Street, Fort, Bombay, has recently bagged an order for supply of 100 buses to Afghanistan.

The payment against the order valued at Rs. 11.30 million will be made in U.S. dollars. It is understood to be the first big order placed by Afghanistan for Indian Commercial Vehicles.

Besides commercial vehicles, the production profile of TELCO includes locomotives and locomotive boilers, excavators, and steel castings. The firm is reported to be the largest exporter of commercial vehicles in India. In 1973-74, the company turned out 22,559 commercial vehicles as compared to 21,779 in the preceding year. This included 1155 special purpose vehicles as against 968 in 1972-73.

Automobile industry constitutes a prominent sector of India's engineering industry. The export value of road motor vehicles, made in India, totalled Rs. 150.25 million in 1973-74. Of this buses (assembled or otherwise) with a foreign exchange earning of Rs. 19.20 million constituted a sizeable item of export growth. The other allied product, namely, lorries an trucks fetched still more at Rs. 20.10 million. Of other categories in the group of road motor vehicles, motor vehicle bodies, chassis, frames and accessories were the most prominent in export trade. Their export earning during the year amounted to Rs. 83.70 million.

The broad manufacturing range of India's automobile industry includes trucks, buses, lorries, motor cars, jeeps, scooters, tractors and almost a complete range of ancillaries and parts. The production in the line is rising year after year.

The output of commerical vehicles rose to about 42,400 numbers in 1973 from 37,460 numbers in 1972 while production of jeeps improved to 13,070 numbers from 12,590 numbers. Similarly, the output of scooters, motor cycles and mopeds was up at 150,903 numbers in 1973 campared to 133,500 numbers in the preceding year.

REFRACTORY PRODUCTS IN EXPORT TRADE

A number of refractory products including refractory bricks and other construction materials are active in India's export trade. During 1973-74, these exports amounted to nearly Rs. 3.50 million against Rs. 2.76 million in the preceding year.

In 1973-74 fire clay bricks and shapes which fetched Rs. 1.36 million in foreign exchange constituted the major item of export. Iran and Bangladesh who bought worth Rs. 3.73 million and Rs. 0.53 million respectively, were the major buyers for the products. Sri Lanka, German Federal Republic, Iraq, Kenya, Nepal and U.K. were the other purchasers.

Next to fire clay bricks, magnesite bricks and shapes were also prominent in the overseas supplies of refractory products. Iran was again an important market, followed by U.K., Netherlands and Singapore.

Refractory cements and mortar also constituted a prominent caegory of export in the line. Iran was the leading buyer for this product as well. Burma, Canada, Sri Lanka Netherlands and U K were the other export destinations.

Besides the above major products, bricks and shapes of chromemagnesite, magnositechrome, high alumina and siliconcarbide as well as other refractory bricks figured in the export trade.

In the context of these exports, M/s. Ishwar Industries Ltd., of Ishwar Nagar, New Delhi, have recently executed an order for supply of various refractory products for Shiraz Refinery Project of the National Iranian Oil Corporation. Valued at about Rs. 1 million, the order was awarded by M/s. Snam Progetti of Milano (Italy). Besides physical exports, the firm claims that it can offer technical know-how for setting up refractories and ceramics plants.

The range of products manufactured by the Delhi firm includes fire bricks (with alumina content 30 to 70 per cent), insulating bricks, acid proof bricks or tiles, bonding cements and mortars, castable refractories, both solid and insulating, ramming masses, high alumina refractory cements, diaspore and pyrophyllite minerals.

Refractories constitute an important segment of ceramic production in India. With 53 units in the field, the industry has an installed capacity of 1.4 million tonnes per annum covering various types, such as, fire bricks including high alumina, silica, basic, insulating and special varieties. Actual production during 1974-75 is expected to be of the order of Rs. 0.75 million. This is likely to attain a level of about 1 million tonnes by 1978-79.

The raw material requirements of the industry include fire-clay bauxite, Kaynite, chromite, dolomite, mica, Zirconia and silicon carbide which are all indigenously available in abundance.

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EXPORT PERFORMANCE AND POTENTIAL

EXPORT UPTREND IN ELECTRICAL MACHINERY

India's export trade in electrical machinery apparatus and appliances improved to Rs. 283.40 million in 1973-74 as compared to Rs. 234.30 million in 1972-73. In 1971-72 the export earning of the group was only Rs. 186.74 million.

The increase in the export value in 1973-74 compared to 1972-73 was registered in different categories of electrical machinery, excepting equipment for distributing electricity. Electrical power machinery and switchgears constituted the most active item of export dynamism. These overseas supplies rose to Rs. 74 million (1973-74) from Rs. 56.15 million in the preceding year. Electric power machinery including generators, squirrel cage induction motors upto 100 HP and above, transformers of varied ratings and parts secured foreign exchange worth Rs. 35.43 million during 1973-74 against Rs. 30.45 million in 1972-73. Electrical apparatus for electrical circuits, such as, oil circuit breakers, motor starters, motor control gears, switch fuse units, switchboards and control panels and accessories together earned about Rs. 38.60 million against Rs. 25.70 million. The major importers of generating sets were Sri Lanka, New Zealand and Sudan while those for squirrel cage induction motors included German Federal Republic, New Zealand and Malaysia. The overseas customers for Indian transformers, amongst others, were Malaysia, Malavi and Thailand.

Telecommunication apparatus proved to be another category of manufacture which attracted larger overseas demand during 1973-74. In the year its export value was about Rs. 45.78 million, apprceiably more than the previous year's level of Rs. 28.80 million. In this group, radio broadcast receivers, including transistor radio receiver sets, domestic radio receivers, other radio receiver sets and components constituted the principal category of export trade. These earned Rs. 35.58 million compared to Rs. 21 million. Of this transistor radio receiver sets alone fetched Rs 16.52 million against Rs. 10 million (1972-73). U.K. (Rs 2.38 million) and Nigeria (Rs. 2.20 million) were the major buyers, followed, among others, by Netherlands, Dahomey Republic and Ethiopia. Components and parts of radio broadcast receivers were sold to nearly 50 countries abroad at a value of Rs. 15.36 million in 1973-74. The leading buyers were U.K. and Arab Republic of Egypt (about Rs. 4.30 million each).Other important markets for these components included Bangladesh, Singapore, Sri Lanka, Dubai, France, German Federal Republic, Greece and Hong Kong. Telecommunication equipment including telegraph apparatus, telephones, microphones, loudspeakers and amplifiers secured foreign exchange worth Rs. 10 million against Rs. 7.7 million. Of this equipment, telephone and telegraph equipment parts alone fetched Rs. 4.15 million in 1973-74. Dubai, Jordan, Kenya, Bangladesh, Tanzania, and U.K. were the major export destinations. Amplifiers which earned Rs. 2.30 million were the second best item of export dynamism in the telecommunication equipment group.

Domestic electric equipment exports also showed an uptrend, though limited, at Rs. 32 million in 1973-74 against Rs. 30 million in 1972-73. In this category are included items like domestic rafrigerators, electric fans, domestic room heaters and electro-thermic domestic appliances. Domestic refrigerators and parts earned about Rs. 3 million during the year. Poland was the best market at an import value of Rs. 2 million (5748 refrigerator units). In the electric fans group, ceiling fans alone secured Rs. 17.53 million. The leading importers included Kuwait (Rs. 5.5 million), Iraq (Rs. 4 million), Nigeria (Rs. 1.56 million) and Australia (Rs. 1.50 million). Air-circulators, portable blowers, pedestal fans, rail carriage fans and table fans were among the other items exported.

There were also other electrical machinery and apparatus supplied abroad such as, batteries and accumulators, electric lamps, thermionic valves and tubes, the photo-cell transistors, automotive electrical equipment, electrical measuring and controlling instruments, electro-mechanical hand-tools and so on. All these products together secured an export earning of nearly Rs. 69.70 million during 1973-74 as compared to Rs. 51.50 million in the previous year. In 1973-74, the exports of batteries and accumulators amounted to Rs. 30.27 million (about Rs. 28.40 million) while those of electric lamps were of the order of Rs. 4.46 million (against Rs. 3.8 million). The offtake of radio receiving tubes, mainly by German Federal Republic, U.K., U.S.A., and New Zealand more than doubled to Rs. 7.45 million from Rs. 3.2 million in 1972-73.

Equipment for distributing electricity was, however, one single category in the electrical machinery group which suffered a mariginal decline during 1973-74 as compared to the preceding year Rs.—61.30 million against Rs. 68.57 million. In this group, insulated wire cables alone were supplied to the level of Rs. 57.90 million against Rs. 63.89 million (1972-73). Enamelled copper winding wires, insulated copper winding wire cables, plastic insulated wires and other insulated cables as well as plastic insulated cables and flexes were the principal categories exported in the group. The major customers for the cable exports were the West Asian markets, particularly Kuwait, Iraq, Iran, Muscat, Qatar and Dubai. Sizeable supplies were also effected to countries like U.S.S.R., Singapore and Guyana. Electrical insulating equipment is another area of export trade in electricity distributing equipment group.

AIR COMPRESSORS IN EXPORT TRADE

India's export trade in air and gas compressors which improved to Rs. 4 million in 1972-73 from nearly Rs. 2.5 million in 1971-72, revealed still further growth in 1973-74 at Rs. 5.85 million.

Larger offtake by the Arab Republic of Egypt and the emergence of fresh markets in Iraq, Poland and Italy accounted for the improvement in 1972-73. In the year that followed, the export growth was possible because of new export destinations, such as Bangladesh, Abu Dhabi, Bahrein Islands, Brazil, Canada, as also due to appreciably higher offtake of a number of countries including Australia, Sri Lanka, France, Iran, Malaysia and Switzerland.

In 1973-74 Bahrein Islands who absorbed these compressors at Rs. 0.50 million was the leading buyer, followed by Belgium and Australia (about Rs. 0.40 million each), France Rs. 0.36 million, Iran and Italy Rs. 0.35 million each and Sweden at Rs. 0.30 million. Brazil, Sri Lanka, Kenya, Malaysia, Bangladesh and Singapore were the other important destinations.

In India, there are currently 12 units in production of these compressors. Their installed capacity is rated at 11,700 numbers per annum. The total capacity covered by industrial licenses and registration, both in the public and private sector, is 13,100 numbers per annum. Letters of intent have been issued for an additional capacity of 500 numbers per annum. These capacities cover heavy duty compressors for specialised application in process industries like fertilizer petro chemicals and steel and high pressure low volume reciprocating compressors.

Actual production of the industry was 6000 numbers in 1973 compared to 5,200 numbers and 5000 numbers respectively in the two preceding years. Hence capacity utilisation of the industry is around 50 per cent. Imports are restricted to certain specialised types of compressors required in process industries.

The estimated requirement of compressors in India is placed at about 12,000 numbers per annum by 1978-79. The scope for further capacities lies in terms of diversification of the present range of production within the existing capacity. Proposals involving the manufacture of specialised type are considered on merit.

In the Public Sector, M/s. Bharat Pump and Compressors Ltd, are setting up capacity for the manufacture of heavy reciprocating types of compressors. Both air and gas compressors are included in the manufacturing programme of this unit. M/s. Bharat Heavy Electricals Ltd., are establishing capacity for the manufacture of large size turbo compressors.

The industry is a neat example of progress achieved in terms of import substitution. The indigenous content for high capacity compressors upto 4500 c.f m. and 10 Atms. discharged pressure, is in the range of 70 to 75 per cent. But the indigenous content is far higher (90 to 99 per cent) for smaller type of compressors. Alloy steel strips, lubricating oil pumps, blades for centrifugal compressors and piston rings are among the raw materials being imported for the manufacture of compressors. Locally available materials are grey cast iron castings, steel forgings, steel sheets and plates and steel rounds.

UPTREND IN EXPORTS OF BASIC CHEMICALS

Against the prorata target set for the period of the first five months of 1974-75 (April-August 1974) at Rs. 239.40 million, the exports of basic chemicals, pharmaceuticals, cosmetics and other allied items falling under the perview of the Basic Chemicals, Pharmaceuticals and Cosmetics Export Promotion Council, Bombay, secured foreign exchange at Rs. 327 million. The overall export increase was of the order of nearly 21 per cent over the exports during the corresponding period of the preceding year when these were valued at Rs. 270.40 million.

The total exports in the full preceding year (1973-74) were at Rs. 698 million. The target for the complete year of 1974-75 has been fixed at Rs. 550.50 million.

Panelwise exports during April-August 1974, however, indicate that the export earnings of the major panel of drugs, phamaceuticals and fine chemicals declined to Rs. 127.35 million from Rs. 148.40 million in the same period of the preceding year. Similarly, the panel of glycerine, soaps, detergents, cosmetics and toiletries too registered down-ward trend at Rs. 14 million against Rs. 18 million.

Happily, the panel of dyes, intermediates, alcohol and coaltar chemicals; Inorganic and organic chemicals; essential oils; crude drugs; agarbattis and miscellaneous items improved its overseas offtake sharply and made good the loss suffered in the exports of other panels. For instance, from nearly Rs. 20 million (April August 1973) the exports of drugs, intermediates, alcohol and coaltar chemicals rose to Rs. 51.15 million (April-August 1974) while those of inorganic and organic chemicals together shot up from Rs. 30.60 million to over Rs. 61 million. Agro-chemicals exports, however, reduced marginally. The offtake of essential oil also more than doubled from Rs. 15 million to Rs. 30.30 million.

Among others panels, exports of crude drugs improved to Rs. 30.10 million from Rs. 27.87 million, agarbattis to Rs. 7.85 million from Rs. 6.57 million and miscellaneous items to Rs. 3.45 million from Rs. 2 million.

CASHEW KERNEL EXPORTS UP

Cashew kernel exports during the first seven months of 1974 (January-July) secured foreign exchange at Rs. 511.60 million as against Rs. 376.60 million in the corresponding period of the preceding year. This was possible owing to an appreciable rise of about 57 per cent in the average unit value of exports. Quantumwise, the overseas supplies declined to 28,060 tonnes from 32,294 tonnes.

During January-July 1974, USSR. emerged as the topmost buyer, having imported 11,925 tonnes against 9323 tonnes and replaced USA which constituted the leading buyer last year (January-July 1973). USA, however, stood as the second important market, having purchased 8087 tonnes against 13,581 tonnes. Almost all other countries reduced their intake during the period of review in 1974 excepting Australia and Hong Kong whose purchases improved to 1029 tonnes and 579 tonnes from 627 tonnes and 213 tonnes respectively.

Among other destinations, Canada bought 2142 tonnes against 2912 tonnes; Japan 1092 tonnes against 1492 tonnes; Federal Republic of Germany 584 tonnes against 744 tonnes; Netherlands 390 tonnes against 565 tonnes and German Democratic Republic 374 tonnes against 567 tonnes.

Export trend in Cashew nut shell liquid also indicated a similar trend during January-July 1974. Quantumwise the overseas supply reduced to 2068 tonnes as compared to 2572 tonnes. Valuewise, the exports, however, registered upward trend—Rs. 4.26 million against Rs. 2.92 million, primarily because of higher unit value realisation.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

COAL AND MINING MACHINERY

Coal and mining machinery manufacture has assumed significance in India recently in the context of the Indian Government's recent endeavour to reduce the country's dependence on imported crude. Efforts are currently underway to convert the oil-based industrial and power projects into the coal- based units owing to availability of inexpensive indigenous coal in the country. In these changed circumstances, the coal and mining machinery sector has indeed to play a significant role for improving production of coal and other mine products.

At present there are in all 12 units licensed for the manufacture of mining and coal washery equipment. The total licensed capacity of these units is of the order of Rs. 370 million per annum. The production range of the mining machinery covers coal cutters, loaders, conveyors, trolleys and wire type electirc locomotives, haulages, electric winders, mine axial fans, booster fans, pumps and sand pumps etc. In addition, a letter of intent has been issued recently for a capacity of Rs. 23 million.

The production of the machinery in the recent years has been improving from year to year. For instance, during 1973, the output was valued of Rs. 90 million which improved to this level from Rs. 79.80 million in 1972 and Rs. 46 million in the year that preceded. In addition to the machinery items already on the production stream, a potential for the manufacture of different types of mining and allied machinery required in the coal mines and non-ferrous mines also exists in the industry.

It has been indicated in the draft Fifth Plan that the targets of capacity and production by the end of the Plan period (1978–89) would be of the order of Rs. 350 million and Rs. 240 million respectively. The industry has a capability to undertake manufacture of even certain specialised and sophisticated equipment that are not currently being manufactured by the industry indigenously. As a measure of diversification such items can be taken up for manufacture.

Their exists a sizeale scope for building additional capacity in respect of a number of machinery items in the field, such as, walking draglines, shuttle cars, drum sharers, heavy duty, scrapper chain conveyors, blast hole drills of about 4" dia and pneumatic rocker shovels.

PRODUCTION OF FISHING TRAWLERS

There are at present 14 yards borne on the list of the DGTD, fabricating coastal boats and crafts. Installed capacity for fishing trawlers as such is not available separately. However, the total annual capacity for the manufacture of boats and crafts is Rs. 85 million, corresponding to estimated steel fabrication capacity of 15,000 tonnes. The production of boats and crafts and fishing trawlers has been averaging around Rs. 115 million annually. One more unit has been issued a letter of intent, specially for the manufacture of fishing trawlers for an annual capacity of 12 numbers for size 72 ft. and above The unit is expected to go into production in 2 to 3 years time. Import of ships and boats was of the order of Rs. 20 million during 1971-72.

The demand for fishing trawlers for off-shore and deep sea fishing was estimated at 300 numbers during the Fifth Plan period. Out of this, arrangements made so far for procurement of trawlers through imports as well as indigenous production comes to about 100 numbers. Although demand for Fifth Plan has not been assessed with reference to the demand pattern obtaining during the Fourth Plan, the estimated requirements of fishing trawlers may be placed at a level of not less than 60 numbers per annum by 1978-79. In so far as indigenous production is concerned, 40 numbers of 57 ft. trawlers are under production with local boat building yards. These trawlers have been designed indigenously by Mazagon Docks in consultation with the Ministry of Agriculture and the designs were supplied to the various yards for fabrication. According to a study carried out recently by the Planning Commission, the demand for various coastal crafts including fishing trawlers required by the various ports during the Fifth Plan would be of the order of Rs. 420 million, i.e., an average of Rs. 80-90 million per annum. The boat building yards whose capacity is also of this order would, therefore, not be in a position to spare enough capacity for the manufacture of fishing trawlers without a cut in production of other types of crafts. Yards like Mazagon Docks and Garden Reach Workshops are also heavily booked with orders. There is, therefore, scope for establishment of additional capacity for trawlers, particularly for larger sizes of 72 ft. and above. This could be achieved either by expansion of the existing units or by setting up new yards. For convenience of production and also for fishing operations the size of the trawlers may be standardised as 72 ft.—75 ft., 85 ft.—90 ft. and 105 ft.—108 ft.

Design facilities will have to be augmented for the manufacture of trawlers, particularly those fitted with refrigeration equipment, electronic fish winders etc. It is also essential that the manufacturers of trawlers and manufacturers of marine diesel engines work in close liasion so that due consideration is given to the operational and manufacturing requirements. Proposals for collaboration for the manufacture of trawlers will be considered on merits having regard to sophisticated nature of the specifications and performance.

MANUFACTURE OF JIGS AND FIXTURES

There are about 15 units registered with the DGTD, for the manufacture of jigs, fixtures and press tools with a total licensed capaciy of Rs. 26 million. Production from these units has been of the order of Rs. 22.5 million per annum. In addition to the units registered with DGTD, there is considerable captive capacity for these items with various major industrial units. It is reckoned that the captive capacity in this industry would be almost equal to the capacity of the specialised units registered with DGTD. Additional capacity covered by letters of intent is to the extent of Rs. 87.8 million.

In addition to the units registered with DGTD and those having captive capacity, there are a number of units in the small scale sector manufacturing such of these jigs, fixtures and press tools that lend themselves for production in small scale sector.

The requirement of jigs, fixtures and press tools is estimated at Rs. 125 million per annum by 1978-79. Jigs, fixtures and press tools are tailor made items and have, therefore, to cater to varying types of demands. Although additional capacity covered by fresh letters of intent is to the extent of Rs. 87.8 million in addition to the licensed capacity of Rs. 26 million, the field offers further scope for new entrepreneurs. In so far as scale of operation is concerned, there is no minimum scale that could be considered as economic. Depending upon the product mix and the sophisticated nature of the tooling proposed to be manufactured, these could be taken up by small, medium and large-scale units.

Although considerable technology is available for jigs, fixtures and press tools, in regard to the sophisticated types of tooling and heavy press tools, proposals for foreign collaboration could be considered on merits.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

DEVELOPMENT OF NEW TRANSFORMER BUSHINGS

Appearing in the import bill of India till recently, the 22 KV 5500 Amps bushings used in transformers are now to be manufactured indigenously by the Transformer Division of M/s. Bharat Heavy Electricals Limited, (BHEL), Bhopal. The indigenous manufacture of these bushings is expected to save foreign exchange at a value of about Rs. 0.90 million per annum.

BHEL were using imported busings - two bushings per phase or one bushing of high current rating-to meet the current requirement of the LV side of big transformers. The bushings newly developed by the Bhopal firm can be used upto 5500 Amps. These have been tested for all the routine tests as well as for impluse and heat run tests. These meet the requirements of IS 2099 and also BS 223 in all respects.

BHEL are also instrumental in developing indigenously some of the items presently being imported into the country by other manufacturers in the country. They have recently developed two such item - i) centrifugal type transformer oil pump and ii) Reflux valve, and have used them in transformers. Both the items have been rigorously tested at the manufacturer's work and found to be meeting the unit's requirements. The indigenous development of both these items is expected to save foreign exchange of about Rs. 200,000 per year.

APPARATUS ELECTRO-SLEEP

An apparatus electro-sleeps has been developed at Electronics & Radar Development Establishment (ERDE), Bangalore.

For persons suffering from chronic insomnia originating from bronchial asthma and minor pains, sleep has to be induced in either by internal means i e. taking pills or by external means i.e. passing low intensity alternating current through the patient's head. The sleeping pills have got their side-effects and may be harmful in some cases. Now-a-days in hospitals the sleep is induced by passing low intensity alternating current through the head of chronic patients.

The unit consists of a transistorised wide band electrical noise generating circuit. The therapentic electrical noise current is applied to the patient through a set of mosh Electrodes. The amplitude of the output current can be controlled continuously. The unit operates at 230V, 50 HZ single phase mains AC supply. The apparatus electro sleep, designed and developed at ERDE, is working successfully in different hospitals and research centres for the last four years.

This unit is intended for use in inducing sleep by electronic methods in hospitals, clinics and home for the treatment of sleep disorders.

The estimated future demand is about 1000 numbers per year. The main components required are ½ watts carbon film resistors, potentiometers, electrolytic capacitors, bridge rectifier, zener diode and power transformers. All are available indigenously.

Due to relatively low turnover, it is necessary that the project should be taken up only by such firms as have the background, experience and standing in the production of professional grade systematised general electronic/medical electronic equipment. List of indigenous equipment is : welding; sheet metal work; painting, engraving front panel making and cabinet making facilities cutter; grinder; sander and blisher; transformer/chokes winding and impregnation facilities; printed circuit cards shaping and drilling facilities; and moulding/potting of high voltage components.

PORTABLE OXY-GAS CUTTING MACHINE DEVELOPED

A portable power driven machine running on rails has been developed at Central Mechanical Engineering Research Institute, (CMERI), Durgapur, for oxy-gas cutting of steel plates upto 75 mm thickness. This machine would be of immense use in fabrication industries. A report on welding industry shows an estimated demand of about 500 oxy-gas cutting machines per annum. The machine can be used for straight lines cuts, circular and for curved profiles. At present only a few machines of imported origin and a few numbers being manufactured indigenously are available.

The hand manuplated torches are not able to give a good degree of steadiness which is the main valueable feature of mechanised cutting apparatus. Uniformity of travel leads to economic use of gases as well as to accurate cuts at optimum speed. In fact, with a correct setting of parameters, we can obtain a degree of accuracy and edge finish requiring no further finishing machining.

The cutting torch is mounted on a portable machine which is driven by universal motor of 1/20 Hp working on 220 volts AC/DC. The machine can withstand the high heat around it. The motor is dynamically balanced to avoid any vibrations which are reflected on the cut surface. The spced of motor is controlled by torroidal rheostate in series with field. A gear-reduction box is also provided. For circle cutting the machine is fitted with a usual rails rod to guide the machine from a punched marked at the centre of circle.

Specifications of the Machine are give belew :

Type of the machine	: Portable nature
Cutting speed	: 15 cms to 90 cms per min.
Cutter height adjustment	: 5 cms
Cutter tranverse adjustment	: 7.5 cms
Cutter level adjustment	: 70°
Drive motor	: 1/20 HP 230 volts universal type
Speed control	: Series resistance
Gear Box	: Triple reduction unit of 3000 : 1
Net weight of the machine	: 5 Kg. excluding torch
Portable track	: Length 2 meters

One prototype has been made by the Institute and tested with India Oxygen Torch. The machine is simple and all the equipment required are available indigenously. The cost of the machine excluding torch will be around Rs. 650.

NEW COIR PRODUCT

A new coir product, 'Coir Wool', named as 'Kayarool' has been evolved by the Coir Board through the efforts of the Coir Research Institute and the National Coir Training and Design Centre at Kalavoor near Alleppy in Kerala State.

The Coir wool, in fact, is an ordinary coir fibre which is made thinner and soft as wool after being subjected to a special Chemical Treatment. It is learnt that druggets made from the Kayarool have found ready market at home as well as overseas. It is stated that the first export shipment of Kayarool druggest was made recently by a well renowned Coir manufacturing unit at Sherthallai in the Kerala State to a West European country. At home level too Kayarool druggets found ready acceptance, especially in Bombay.

With the development of this new Coir item, it is expected that the export earning of the Coir Industry would improve sizeably. With its improved texture and better elegence, coupled with sharper outline designs and better colour fastness than the traditional coir fibre, the products made from the kayarool are expected to be very popular abroad.

Apart from Kayarool, the Coir Board has also brought out two other new products-rubber backed coir mats and tubular coir mattings which could be advantageously used as loose pipes for pumps and similar purposes.

NEW STRIDES IN DEFENCE PRODUCTION

India's Defence industry has made remarkable progress since Independence (1947) when there were only 17 ordnance factories manufacturing rudimentary armament with limited capacity to produce rifles, guns, ammunition of old vintage and certain miscellaneous stores required by the Indian army. They were merely subsidiaries of the Royal Ordnance Factories in England and no efforts had been made to build up competence, design and development. The machinery in these factories was also anything but modern.

It was only after Independence that a vigorous effort was launched for import substitution and acquiring of technology for new weapons and equipment. The efforts of Indian defence scientists, engineers and technicians during the last 27 years have resulted in a phenomenal advance in armament technology and new sophisticated production. Today, Indian defence factories are turning out supersonic jet fighters, frigates, sophisticated radars, communication equipment, missiles, explosives, a large variety of arms and ammunition and items of general stores. Nearly 70 per cent of the requirements of the forces are now met from indigenous sources. The effectiveness of the Indian armed forces in the recent past, whether in artillery or in armour, in naval action or in the air has been to a large extent, the result of the defence production efforts during the last decade.

The progress made during the last few years by the ordnance factories can be judged from the fact that the value of production in these factories rose from Rs. 410 million in 1961-62 to over Rs. 3000 million in 1973-74. The production of the defence public sector undertakings, all set up or taken over after independence, has been showing steady progress, the value being Rs. 2360 million in 1973-74 as against Rs. 1740 million in 1971-72. This is expected to go up to Rs. 3000 million during the current year.

The 30 departmental ordnance factories are now producing rifles, grenades, mortars, ammunition and bombs, medium calibre guns, rockets, vision, sighting and control equipment, 3-ton and 1-ton petrol vehicles. They are also producing explosives, propellants, machine tools, parachutes, floats, medium tanks, armoured recovery vehicles, clothing, pre-cooked food, etc. The range of items produced in the 8 defence public sector undertakings covers supersonic jet fighter aircrafts, helicopters, aircraft engines, Leander class frigates, dredgers and other vessels required by the Navy. Radars for air defence and storm warning, transmitters, receivers, trans-receivers, earth moving equipment, rail coaches, machine tools, copying lathes and anti-tank missiles are also being produced by these undertakings.

The main thrust of defence production for the last few years, has been towards indigenous development and design of defence equipment. The Defence Research and Development Organisation and R & D Divisions of the defence public sector undertakings have achieved notable successes in this field. The new projects envisaged for the coming years are mostly for the production of items developed indigenously.

SUPER ALLOYS AND PROPELLANTS

With the introduction of high calibre and sophisticated weapons and ammunition, there is greater need for special metals and super alloys required for aeronautics, electronics, rockets, missiles and instrument industries. The country is today solely dependent on imports for these alloys which include nickel alloys, titanium alloys, special permanent magnets and soft magnetic alloys. These alloys are characterised by their very special properties. Their manufacture involves most modern and complex techniques which have been developed by the Defence Metallurgical Research Laboratory (DMRL), Hyderabad.

The recently set up public limited company entitled Mishra Dhatu Nigam with its headquarters at Hyderabad is to execute a project to manufacture these alloys. The project costing about Rs. 400 million is expected to start production by 1978. With the successful commissioning of this plant, India will rank among the very few nations who possess the technology for manufacture of these special metals and supper alloys. Similarly, there is a plan to set up a propellant factory to meet the additional demand for propellants. The planning in this case is in an advanced stage.

AIRCRAFT AND ACCESSORIES

In its factories at Bangalore, Kanpur, Hyderabad, Nasik and Koraput, the Hindustan Aeronautics Ltd., (HAL) is producing aircrafts and engines. As far as accessories for aircraft are concerned, the country has hitherto been entirely dependent on foreign sources for their supply. Accessories constitute roughly 30 per cent of the value of modern aircraft. The new HAL factory set up at Lucknow to manufacture these instruments will help reduce India's dependence on imports. The factory is to produce wheels and brakes, hydraulic equipment, fuel systems and ejection seats for aircrafts.

RADARS AND COMMUNICATION EQUIPMENT

The commissioning of the second factory of the Bharat Electronics Ltd. (BEL) at Ghaziabad in January, 1974 marked yet another milestone in the progress of the defence industry. The unit has started manufacture of a new generation of highly sophisticated radar and microwave communication equipment for our defence and civil requirements. Costing about Rs. 115 million, the Ghaziabad unit of the BEL has been entirely designed and constructed by Indian engineers. When fully in operation, the factory will employ about 4000 personnel of all categories. The BEL also proposes to set up a project to manufacture highbrid micro-circuits. This will help indigenous manufacture of sophisticated electronic components in the field of semiconductors technology.

SHIP-BUILDING ACTIVITIES

The defence public sector undertakings engaged in building and repair of ships have a number of new projects. The Mazagon Docks Ltd., Bombay has completed a modernisation and expansion plan creating facilities in its yard for undertaking construction of vessels up to 15,000 DWT. It now has a tentative plan to build a large dry dock and building dock at Nhava Sheva for the repair of bulk carriers. The first marine diesel engine built at the Ranchi factory of the Garden Reach Workshops, Calcutta, was recently commissioned. For the first time, the ships made in India would be propelled by indigenously constructed engines. Garden Reach Workshops have also taken up an expansion and modernisation project for building a new dry dock, fitting out jetty and new structural shops for ship-building which will enable construction of ships up to 28,000 DWT. To meet India's increasing demand for road rollers, the Garden Reach Workshops is establishing another road roller unit at Nagpur. Production in the factory is expected to start soon. The undertaking will also soon be embarking on the construction of fibre glass petrol boats to help the Customs Department control smuggling activities around the coastline.

ORDNANCE PROJECTS

With the advances in science and technology, the ordnance factories are engaged in a constant exercise to increase the fire power and mobility of Indian forces and their capacity to operate in a number of environments with versatility and flexibility. In order to keep pace with the vast developing technology and to build up a sound and wide indigenous defence production base, there is a continuous programme of modernising and augmenting the capacity of the ordnance factories. In these efforts, the ordnance factories draw heavily on the Research and Development Organisation which has 32 major establishments and laboratories. This organisation has created a broad base of facilities, know-how and expertise in the fields of conventional and sophisticated weaponry.

Indian scientists and technologists have designed and developed a field gun which is far superior to the 25-pounder gun of World War II vintage. The project to replace the 25-pounder gun with the indigenous 105 mm Indian field gun is to be completed by 1977-78. Meanwhile, a trickle production from within the existing capacity available for the manufacture of other guns has already begun. Work on the development of an improved version with lighter weight and greater manoeuvreability has already commenced.

To meet the army' requirements in both the infantary and armoured roles, a project for the manufacture of 7.62 mm medium machine gun has been sanctioned. Its production is expected in about three years time. Another project likely to start production by 1977 is for the indigenous manufacture of ammunition for 130 mm gun. The ammunition is presently being imported.

Plant and machinery for a project to manufacture propellants for rockets and ballistites for bombs have been received and are being erected at Bhandara (Maharashtra). It is expected to be commissioned within a year.

To boost the production of coal, the Coal Mines Authority urgently requires commercial explosives. The Department of Defence Production has undertaken to set up civil explosives factory also at Bhandara under the supervision of a joint project authority consisting of the representatives of the Department of Defence Production and the Coal Mines Authority.

The Krupp-Man bridges made out of aluminium alloys sections are required by the army for the transport of heavy fighting vehicles across rivers. Facilities for their manufacture have been set up at Ordnance Factory, Ambajhari (Maharashtra) along with an

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extrusion press. A foundry to produce aluminium alloy ingots required for the extrusion press is expected to be commissioned soon. A trickle production of Krupp-Man bridges has already commenced.

VEHICLES

The production of army vehicles in the Vehicle Factory, Jabalpur, will get a fillip when the Grey Iron Foundry, a captive unit of the factory goes into production in about two years time. Indigenous content of the vehicles produced in the factory will go up substantially since the engine blocks and castings, currently being imported, will be cast here.

To meet the army's requirement for armoured personnel carriers, a proposal is under consideration for establishing capacity for the manufacture of the APCs. Prototypes are currently under trial. Proposals are also under consideration to create facilities for the production of other light armoured vehicles. □

Attention

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DIESEL ENGINES ON EXPORT FRONT

India-manufactured diesel engines and parts are sought for keenly in overseas markets. During 1973-74 these products secured about Rs. 90.50 million in foreign exchange. The types of engines exported included vertical and horizontal marine and stationary engines of different Horse Power as also engines and parts for motor vehicles.

Of the total export value in 1973-74, stationary (vertical) diesel engines alone accounted for an earning of Rs. 37.95 million while parts for stationary engines contributed Rs. 30.64 million in foreign exchange. Saudi Arabia, Iran, Philippines, Iraq, Indonesia and Syria were the major markets for these engines. Federal Republic of Germany with an intake worth Rs. 9.77 million was the leading buyer for stationary diesel engine parts. Other major buyers for the product included, Iran, Bangladesh, Philippines, Saudi Arabia, Sudan, Syria and Thailand.

Next to vertical stationary diesel engines, horizontal diesel engines (stationary type) were also active in export trade. These were supplied abroad to fetch Rs. 3.20 million in foreign exchange. Saudi Arabia topped the list of buyers of which Iran, Iraq, Kuwait, Libya, Syria, Afghanistan, Singapore and Tanzania Republic were also prominent.

The export value of other important products in the field was marine diesel engines (horizontal) Rs. 0.90 million; marine diesel engine parts Rs. 0.50 million; marine diesel engines (vertical) Rs. 1.10 million; diesel engines for motor vehicles (vertical) Rs. 1.28 million; diesel engines motor vehicles (horizontal) Rs. 0.22 million and related diesel engine motor vehicle parts Rs. 14.75 million.

In the context of these exports, one of the manufactures in the line, M/s. Cooper Engineering Ltd. (Construction House, Wittet Road, Ballard Estate Bombay-1) has recently secured an order for supply of about 4,500 diesel engines and their parts to Bangladesh at a value of Rs. 12.50 million. The first instalment of

1,350 engines is expected to be shipped shortly while the entire order is to be executed by the end of this year.

The production profile of the Bombay firm includes diesel oil engines, machine tools, textile machinery, and agricultural implements.

Included in the priority sector, India's diesel engine industry has an annual capacity of 292,200 numbers spread over 31 large and medium scale units. Letters of intent for an additional capacity of 164,350 numbers per annum have been issued. Actual production was of the order of 132,000 numbers (Rs. 550 million) in 1973 as against 79,000 numbers (Rs. 347 million) in 1972. Additionally, there is substantial production of small HP (upto 15 HP) diesel engines in the small scale sector. Present capacity utilisation is about fifty per cent. The industrial policy in the line encourages open licensing. However, foreign collaboration is considered on merits. Excepting a few components, most of the raw materials are available indigenously. To its credit, the industry has achieved almost cent per cent imports substitution in the manufacture of vertical engines below 15 HP and horizontal engines below 50 HP. Imports are limited to only a few special types of high output engines. These were restricted to only 29 numbers (Rs. 6.80 million) in 1972-73.

EXPORT SUCCESS IN COTTON TEXTILES

Exports of cotton manufactures (excluding yarn, thread and clothing) from India nearly doubled to Rs. 2353 million in 1973-74 from Rs. 1267 million in the preceding year. Of this, millmade piece goods earned as much as Rs. 1611.54 million in 1973-74 against Rs. 851.15 million in 1972-73. Handloom piece goods improved their export value to Rs. 320.57 million during the year from Rs. 165.38 million in 1972-73. Besides piecegoods, other woven cotton fabrics excluding narrow or special fabrics fetched Rs. 47.68 million in foreign exchange compared to Rs. 17.67 million. Tulle, lace, embroidery, ribbon, triminings and other small wares of cotton secured Rs. 21.64 million against Rs. 10.54 million. The same trend was noticeable in case of special cotton fabrics (including related products) and floor coverings and tapestries. These brought in Rs. 15.95 million and Rs. 17.39 million respectively during 1973-74 in contrast to Rs. 6.21 million and Rs. 10.86 million in the preceding year. Other made up articles (wholly or chiefly of cotton) including bags and sacks, tarpaulins, tents blankets, bed sheets, counterpanes, napkins pillow cases, table cloth cover, towels, bed linens, curtains, mosquito nets and netting also secured more at Rs. 318 million against Rs. 205.28 million.

Indian cotton manufactures find their way to almost all countries of the world. Major buyers include Afghanistan, Saudi Arabia, Bangladesh, U.K., and other EEC countries, Sweden, U.S S.R., Poland, Canada, Australia, New Zealand, U.S.A., Federal Republic of Germany, France and Czechoslovakia.

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Contributing to the export in the line, M/s. Phoenix Mills Ltd. (462, Sanapathi Bapat Marg, Lower Parel, Bombay), one of the manufacturers in the line succeeded in stepping up their exports to Rs. 41.20 million in 1973-74 from Rs. 11.30 million in the preceding year, registering more than three fold increase. Their total exports during the first three months of the current year added up to Rs. 12 million.

The firm is engaged in the manufacture of bed tickings, drills, coatings, leno shirtings, mercerised and bleached dhoties, mulls, check dorias, cord poplins, bleached printed voils, furnishing fabrics and a number of other items. Currently, it is going in for modernisation of its plant and machinery with a view to further improve the quality and quantum of its production. Orders are reported to have been placed by them for sophisticated machinery to the tune of over Rs. 18 million, which include supler spinners, looms, and other processing machinery.

Yet one more mill in the line, M/s. Broadbury Mills, has been able to net Rs. 25 million in foreign exchange in 1973-74 achieving an increase of 120 per cent over its export performance in the preceding year. Total sales of the company were also up by 23 per cent to Rs. 52.60 million during the year. Sales turnover at the end of the current year is likely to reach a record level of Rs. 80 million.

Production of cotton textiles in India reached a peak level of 8022 million metres in 1972 as against 7357 million metres in 1971. During January-June 1973, it totalled 3590 million metres. Of the total production in 1972, the mill sector accounted for 4,245 million metres (534.65 million kgs.) while the share of decentralised sector was of the order of 3777 million metres.

The industry has in its infrastructure 788 mills comprising 398 spinning mills and 290 composite mills (July 1973). The installed capacity of both the categories of mills totalled 18.45 million spindles. Of this, the spinning mills had a total installed capacity of 6.20 million spindles while that of composite mills was about 12,25 million spindles. In all, the industry had 206,295 looms installed.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT PERFORMANCE OF DYEING, TANNING AND COLOURING MATERIALS

India's earning in foreign exchange through export of dyeing, tanning and colouring materials totalled Rs. 113.85 million in 1973-74 improving upon the performance at Rs. 92.65 million in the preceding year. In 1971-72, the export value was only Rs. 54.50 million.

The improvement in 1973-74 was made possible due to increased earning of synthetic organic dyestuff, natural indigo and colour lakes which fetched nearly Rs. 78.60 million compared to Rs. 45.20 million in 1972-73. In this group, direct and sulphur dyes was the major area of sizeable export growth which brought in Rs. 22.10 million while vat dyes secured Rs. 13.96 million. In the same group, lakes, solvent dyes, organic pigments was yet another line of active exports, having earned Rs. 14 million while reactive and azoic dyes were supplied overseas to fetch Rs. 13.75 million. The export earning of other categories in the group was: basic dyes Rs. 9.35 million; acid dyes Rs. 4 million; disperse dyes Rs. 0.25 million and other organic synthetic dyestuff Rs. 2.11 million.

Netherlands, USA, UK, Japan, Iran, Singapore, Iraq and Hong Kong were the significant buyers of direct dyes and sulphur dyes while Switzerland, USA. Arab Republic of Egypt, Bangladesh and Thailand were the prominent customers for vat dyes. Lakes, solvent dyes, organic pigments were mainly imported by USA, Hong Kong, Federal Republic of Germany, and Switzerland and for reactive and azoic dyes Japan, USA, UK, Netherlands, Brazil, Federal Republic of Germany and Hungary were the main customers.

There was however a fall in exports in the group of pigments, paints, varnishes and related materials. These earned Rs. 32.74 million in the year under review against Rs. 45.67 in 1972-73.

In the group of pigments, paints, varnishes and related materials, synthetic enamels constituted the largest single item of sizeable export earning in 1973-74. It secured as much as Rs. 15.88 million. USSR was the leading buyer which imported the bulk at a cost of Rs. 13.83 million. Abu Dhabi, Ethiopia, Saudi Arabia, Qatar and Kuwait were prominent among other buyers.

Prepared inorganic pigments was the next best item of export dynanism in the group. It earned as much as Rs. 3.94 in foreign exchange from a number of countries of which Philippines, Thailand, USA, Hong Kong and Indonesia were prominent.

Besides the above two major items, export value of other items in the group was : printers's colours Rs. 2. 45 million, prepared organic dyestuff pigment dry Rs. 0.77 million; artists' colours Rs. 0.54 million, varnishes Rs. 0.54 million, ready mixed paints Rs. 1.96 million and other paints Rs. 3 million. A variety of colouring materials were also active in the export trade during the year and earned Rs. 3.51 million.

There was a marginal decline in the export value of dyeing and tanning extracts and synthetic tanning materials from Rs. 1.85 million (1972-73) to Rs. 1.50 million. Cutch extracts, food colours, tanning extracts of vegetable origin, myrobalan fruit extract and wattle extract were the specific items supplied abroad in this group.

TRADE BETWEEN INDIA AND BULGARIA

The Working Group on Trade set up at the first meeting of the Indo-Bulgarian Joint Commission for Economic, Scientific and Technical Cooperation which met recently in New Delhi reviewed the implementation of the 1974 trade plan between the two countries and noted with satisfaction that it was being implemented effectively. The total trade turnover between the two countries during 1974 was estimated to be of the order of Rs. 500 million. The trade plan for 1975 which was recently concluded in Sofia envisaged a total trade turnover of Rs. 850 million, i. e. Rs. 425 million either way. This represented a substantial increase over the current level of trade. The Group welcomed this steady growth and expressed the hope that a firm basis had been created for further expansion and diversification of trade for mutual benefit.

It was agreed by Bulgaria that with the present improvement in their balance of payments position they would take steps to promote import of non-traditional items and manufactured products from India. The Group agreed that the proposals for technical collaboration in various fields which are separately under consideration of other Working Groups set up by the Indo-Bulgarian Joint Commission would provide scope for expansion of trade between the two countries and open up possibilities of long-term commercial contracting with respect to supplies of several commodities from both sides. Electronics, food processing industry and agriculture, pharmaceutical industry and machine building and heavy industry were promising areas of cooperation and to the extent that cooperation proposals in these fields materialised, the flow of trade would increase.

India is prepared to import from Bulgaria larger supplies of urea, other mixed fertilizers, steel and steel products, chemicals, drugs and pharmaceutials and is interested to export jute manufactures, ores, spices, leather and leather products, oilcakes, groundnuts opium, etc. The Working Group on Trade apprised itself of the demands and both sides agreed to consider possibilities for working out long-term arrangement for assured supplies of commodities of interest to each other.

EXPORTS OF AUTOMOBILE AND ANCILLARY INDUSTRY

The growth potential of the automobile and ancillary industry is fully reflected by the increasing export quantum and value. From Rs. 143.5 million during 1969-70 to Rs. 212.7 million during 1970-71, the export of automobile and auto parts registered an increase of 48 per cent. Automobile buses and lorries were exported to the tune of Rs. 24.30 million in 1973-74 while the value was only Rs. 20.10 million during the preceding year. Automobile chassis and engines too improved their overseas sales to Rs. 50.88 million from Rs. 48.38 million in 1972-73.

Automobile engines constitute yet another area where export performance has improved considerably from Rs. 18.8 million to Rs. 31.7 million in the comparable two years. The German Federal Republic, the U.K., Yugoslavia, ARE and Sri Lanka are the important importers of automobile engines. Exports of automobile parts were more than Rs. 21 million compared to the preceding year. Yugoslavia, ARE, Singapore, Sudan, Iran, Nigeria, the UK, Sri Lanka and Afghanistan were among the significant buyers of automobile parts from India.

In addition to the above, there were also some exports of auto rickshaws to Bangladesh and Yemen Arab Republic; Fire brigade cars to Sri Lanka and Arab Republic of Egypt; automoblie tempos to Tanzania; automobile petrol tankers to Thailand; fork-lift, trucks and parts to Sri Lanka, Dubai, Kenya and ARE; motor cycles to Malaysia, Sri Lanka, Dubai, Kuwait and Australia; scooters and parts to Bangladesh, Hong Kong, Sri Lanka, Thailand, Afghanistan and Saudi Arabia. In fact, automobiles and parts occupy a prime position in the context of India's engineering export trade.

AIR-CONDITIONING AND REFRIGERATION INDUSTRY'S EXPORTS

The development of the air-conditioning and refrigeration industry in India is coming up fast. New types and various ranges of equipment are manufactured to make the country self-sufficient. Of all the countries in West Asia and South East Asia, India has the most highly developed air-conditioning and refrigeration industry. The country is not only in a position to make sizeable exports of refrigerators, air-conditioners, deep freezers, water coolers, but is also well placed to offer complete turn-key projects covering industrial refrigeration and air-conditioning.

Starting with a meagre foreign exchange earning of Rs. 4 million by way of export some 4/5 years ago, the industry's direct exports last year amounted to about Rs. 15 million. The exports during 1973 had registered an increase of 140 per cent and export booking for this year shows that there will be an increase of 200 per cent in export of the industry's products.

While the manufacure of heavy compressor controls and heat-exchangers is in the process of being extended and diversified, the production of refrigerators, air-conditioners and many other appliances, such as water coolers, deep freezers, packaged air-conditioners, etc. has become well established. With the utmost reliability already built into its products, India is in a position to manufacture and supply to the world markets a wide range of equipment of this industry - from the most simple to the most sophisticated.

INDO-AUSTRIAN TEXTILE AGREEMENT

An agreement on cotton textiles has recently been concluded between India and Austria. The agreement will be effective for a period of four years from 1st January, 1974.

Under the agreement, the total quota for the export of cotton textiles from India to Austria in the first year will be 728 tonnes as against 525 tonnes for October, 72 - September, 1973 under the last Agreement. The growth rate would be 6 per cent as provided under the GATT International Arrangement on textiles. Lastly, the agreement provides that handlooms will be outside the quota restrictions.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

STEEL PRODUCTION AT BOKARO PLANT

The massive Bokaro steel plant entered a new stage of operation when its first 100-tonne converter began making ingot steel on December 27, 1973. There will be four 100-tonne converters for the 1.7

million ingot tonne Stage I, a fifth 100-tonne converter for the intermediate 2.5 million tonne stage and two more converters of 300-tonne capacity for the four-million-tonne stage. Bokaro began making steel ingots also in December last. The intention is to expand the Bokaro plant ultimately to 10 million tonnes capacity.

The converter at Bokaro is the biggest so far installed in India. Previous experience with converters in the country has been confined to Rourkela plant. The Bokaro plant will need to keep two converters in turn to maintain one in production, with a capacity of 0.85 million tonnes a year. Each converter will have to be shut down for a week for relining after about a week's operation.

Technicians at Bokaro plan to run the converters for 160 heats before shut-down for relining, against about 120 heats at Rourkela. Bokaro's ambition compares with about 400 heats on an average in some Japanese plants before relining. The pig iron produced at Bokaro has proved so far to be better in quality than what the designers had prescribed.

One of the interesting features at Bokaro has been that the performance of the early units of the plant has been much better than the norms spelled out by the designers. Both the coke-ovens and the blast furnaces have been made largely with indigenous components, fabricated mainly at the Heavy Engineering Corporation, Ranchi and the Garden Reach Workshops, Calcutta. The first blast furnace-2,000 cubic metres in size-has a rated production capacity of 2,600 tonnes a day, but it has marked up a single day's peak performance of 3,000 tonnes of iron. The average production during the past year has been 2100 tonnes a day.

The first coke-oven battery was comissioned at Bokaro in September 1972 and the second battery in October 1973. The second battery was lighted up in May 1973.

It is hoped that all the four coke oven batteries needed for Stage I will be ready by the end of 1974. Three more batteries are needed for the four-million-tonne Stage II. The three blast furnaces for Stage I will also be in position by the end of 1974.

The slabbing mill, with a capacity of 5.5 million tonnes and the hot rolling mill, will also be ready in 1974. The cold rolling mill may take a little more time to complete.

IMPRESSIVE GROWTH OF ENGINEERING INDUSTRY

Since 1951, India has been implementing massive programmes for economic and social development. "Build Machines, Build India" has been the national slogan. Under the first three Five-Year Plans, India invested nearly Rs. 210,000 million in this context. This exceeded the total outlay during the 140 years preceding 1947, unique example in the world's history of economic development under democratic conditions.

The overall outlays envisaged in the Fifth Plan in the organised industry and mining sector are as below :

(i) Centre : Rs. 78,290 million.

(ii) States and Union Territories : Rs. 4990 million. Total : Rs. 83,280 million.

Private and co-operative sector; Rs. 62,000 million.

Grand Total : Rs. 135,280 million.

These outlays include new investments for the expansion of capacity and also provision for replacement, modernisation and additions to inventories.

The predominant role of the public sector is reflected in the relative share of the public sector amounting to approximately 62 per cent of the total.

As a result of the successful implementation of large-scale programmes of industrialisation on a nation-wide basis, Indian engineering industries have emerged as a great national enterprise. In the early fifties, India could hardly build machines, machine tools and miscellaneous engineering goods worth Rs. 1,000 million a year. Today, the level of output is of the order of Rs. 35,000 million or approximately one-fifth of the gross national production.

Production of Engineering Goods (Ex-factory value of output).

Year	In Million Rs.
1950	590
1955	1,000
1960	8,250
1966	20,580
1967	22,000
1970	25,000
1971	28,000
1972	32,000
1973	35,000

The expansion of Indian engineering industries has been fast and extensive, both horizontal and vertical and finally, both export and domestic market-oriented. This three-dimensional growth based on modern technology, has radically altered the character and complexion of Indian engineering industries.

The progress of the engineering industry in India, though of recent origin, compares favourably with that of industrially advanced countries of the world in terms of number of manufacturing establishments, employment situation and net output.

ELECTRIC MELTING FURNACES

These cover electric arc melting furnaces, high, medium and mains frequency induction furnaces and induction heating equipment.

There are three units in production. The total licensed capacity for arc melting furnaces on maximum utilisation is 60 numbers per annum, based on an average size of 10 tonnes melting capacity. The current production is of the order of 35 numbers. During the last two years there has been a spurt in the demand for melting furnaces for mini steel plants. Furnaces upto 30 tonnes melting capacity have already been manufactured. Existing manufacturers can go up to 50/60 tonnes capacity also.

The requirement of furnaces is directly linked with steel production. The Panel for Furnace Industry estimated that the requirement of furnaces at the end of Fifth Plan would be of the order of 27 furnaces, on the assumption that 20 per cent of the production of steel would come out of electric arc melting furnaces. Since the available capacity is more than the estimated demand during 1973-74, there may not be scope for establishing further capacity.

For furnaces upto 10 tonnes capacity, import of components is less than 5 per cent. For 30 tonnes furnaces, certain electrical equipment like on load tap changers, switchgear etc. are to be imported.

So far as mains, medium and high frequency induction melting furnaces are concerned, there are four firms engaged in the manufacture of main frequency furnaces and in the manufacture of medium frequency furnaces with a capacity of approximately 34 furnaces per annum. The production is of the order of 12 numbers.

No precise estimate of demand has been made. For high frequency furnaces operatng at 10,000 cycles and above, there, is no indigenous capacity. These furnaces are generally required for melting high alloys and it is desirable to establish capacity for this. The main imported component is frequency convertor.

Import of technology for high frequency furnaces is permissible.

In regared to induction heating equipment and appliances, it may be noted that these classes of equipment are used for re-heating materials through induction heaters. For instance, a bloom or a billet could be heated by this device before further operations like extrusion or re-rollng take place.

There is one firm manufacturing these equipment and one more is expected to go into production shortly. production capacity for these are within the total capacity for electric furnaces of all types. The production of these items has been mainly against defence requirements.

No precise estimate of demand is possible. There may be scope for establishing additional capacity in this field, as a measure of diversification.

INDIAN RAILWAYS - PROGRESS AND POTENTIAL

As India's premier carriers the Indian Railways transport all the essential commodities vital to the nation's economy and defence. Nearly 559,000 tonnes of this basic cargo is carried by rail every day.

In the last 20 year, the goods traffic moved by the Indian Railwas has increased by 180 per cent and passenger traffic by 110 per cent. The freight traffic which used to be 98 million tonnes in 1951-52, is now about 200 million tonnes.

During the Fifth Plan period, a 50 per cent increase in demand for rail transport is envisaged with freight traffic increasing from about the persent level of 192 million tonnes to 300 million tonnes. Passenger traffic is likely to grow by about 20 per cent in the non-suburban category and by about 25 per cent in the suburban category.

Nearly three-fourth of the total traffic on the Railways is noved over the trunk routes connecting the metropolitan cities of Delhi, Bombay, Calcutta and Madras which, in terms of route kilometres, account for less than one-fourth of the total route kilometres of Indian Railways. In the Fifth Plan, these trunk routes are likely to be strained still further.

The development programmes of the Railways in the Fifth Plan will aim largely on augmentation of capacity on the trunk routes and introduction of technical improvements. such as, new forms of rolling stock including 'container services' and 'unit trains', conversion from metro gauge to broad gauge, improvement in standards for track and bridges enabling the running of faster and heavier freight trains, high-capacity and high speed long distance passenger trains. Most of the new investments on the Railways will thus have to be devoted to building up of an increasing efficient rail transport system rather than the expansion of the network itself.

Although it is difficult to anticipate the exact pattern of traffic evolving in future, it is certain that more and more traffic in bulk commodities would come for movement by rail, the roads taking the role of short distance and feeder services, providing complementary service to the Railways. Railways would have to consolidate their "Smalls" traffic which does not pay for its cost and takes a lot of line and terminal capacity. The grouping of "Smalls" traffic at major terminals would be an important means of converting the less-than-car-load traffic wagon-load traffic to train loads. The activities would be concentrated for siding-to-siding traffic and through a few major terminals. Movement would be so organised as to serve the small consumers through dumps and storage depots and distribution from such spots arranged through feeder road services. It will be the Railway's endeavour to give up breaking freight trains in marshalling yards and to adopt a through system to the greatest extent possible.

The Railway system will be modernised, particularly, over the high density routes linking the main centres of population and of industry and commerce. The indvestment would be concentrated on the main trunk routes which carry heavy quantum of traffic. The rolling stock, track and bridges and other needs for moving heavier trains will be taken up on priority, to make train running with loads of 4500 tonnes to clear, the bulk traffic on the 'unit train' concept.

The Railways have given serious thought to different measures that can be initiated to contain requirement of dicsel oil and the extent to which electric or steam traction could be developed to meet growth of traffic in the coming years.

The first thing is that Indian Railways are not going the revert to steam traction. The economic life of the existing steam fleet is being extended by rehabilitation and subsequent better maintenance. At the same time the railways, would go in for more electrification of routes. During the Fifth Plan 1800 additional kilometres would be electrified.

Some of the other steps that the Railways are considering and in some cases, have already initiated action for reducting energy requirements for traction, consist of use of track with long-welded rails, rolling stock with roller bearings, better maintenance standards for track rolling stock, operation of trains at speeds are optimum from point of view of fuel consumption and introduction of point to-point unit trains with lesser stoppages en-route.

The Railway have been performing a key role in stimulating socio-economic developments. There hove been able to achieve this purpose because of their modernisation programme, the drive for self-sufficiency and development of indigenous technical knnw-how and the industrial peace.

MANUFACTURE OF CINEMA ARC CARBONS

Cinema arc carbons are used in the projection of motion pictures. There are three types viz. high intensity type used for general purposes, rotating type used in 70 mm. projection, and low intensity type for mobile purposes. While the first and the last types can generally be manufactured with the same equipment, the production of the second type would call for certain auxillary equipment.

There are two factories producing this item, with a total installed capacity of 9 million pairs per annum. Production is around 8.5 million pairs, representing almost full utilisation of installed capacity. This production represents the high intensity type only. Low intensity type has also recently been taken up for production.

Imports have been worth Rs. 0.37 million during 1970-71 and Rs. 0.84 million during 1971-72. There has also been export to the extent of Rs. 0.18 million during 1970-71 and Rs. 0.2 million during 1971-72.

An additional capacity of 20 million pairs has also been approved in this field. The five schemes, which would account for this capacity, are based on the process know-how developed by the Council of Scientific and Industrial Research. A capacity of nearly 10 million pairs, out of these schemes, is under implementation.

The demand by 1978-79 has been estimated by the Cinema Arc Carbon Advisory Committee at 21 million pairs per annum for all the three types. In order to achieve this level of production, a capacity of 28 million pairs would be called for.

On the basis of the licensing position indicated above, the scope for licensing further capacity in this field will have to be determined with reference to the progress of the various schemes already appproved. A clear picture of the capacity expected to be available by the end of 1978-79 would emerge during 1974-75.

Calcined petroleum coke, graphite and pitch, which constitute the primary materials, are available indigenously.

Process know-how has been developed by the Council of Scientific and Industrial Research at the National Physical Laboratory, New Delhi and is being availed of by several entrepreneurs.

A substantial portion of the equipment required for manufacture of cinema arc carbons is available indigenously.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

A NEW TYPE GAS LIGHTER

National Physical Laboratory, New Delhi, has developed a new type of gas lighter. It comprises a container containing cells which are supported on a spring. The container has a switch for making electrical contact between the cells and the filament-element. A metallic armtube and a thick copper wire insulated from each other are fixed on the top container. A filament element protected by metallic guard is fitted on the upper end of the armtube. Now when press-button switch is pressed, the electrical contact is made between the cells and filament element which gets red hot and when placed in a gas, the gas catches fire. The filament is made of rhodium/platinum alloy.

At present a match box, flint gas lighter or an electrically operated gas lighter are being used to burn/light the gas in the houses, industries and laboratories. Match boxes usually get moisted in humid climates and give trouble in burning/lighting the gas. The life of a flint gas lighter is short and is not a very convenient device and is not popular. The draw back with the electrically operated gas lighter is that it cannot work in the case of electricity failures which is very frequent these days.

In this new gas litghter, all these factors have been taken into account alongwith the economic and operational factors in developing a new type of gas lighter which is very convenient in use and is quite handy. It requires no maintenance or after sales services. A user simply has to replace the cells. They get discharged after long use.

In the preliminary investigations work, various types of kanthal and Nicrome wires 40-44 SWG were tried but these did not develop adequate temperature within reasonable time limits of 2-3 seconds to burn/lights the gas. Later on, taking into account the electrical data, a wire of Rhodium/Platinum alloy was tried which gave the most satisfactory result. The gas lighter consumes 600 to 750 M.A. of current and heating filament element develops a temperature of 800-850°C. The heating of filament wire is instantaneous when current is passed by pressing the switch. The life of the filament is indefinite, being the alloy of noble metals. Preliminary test trial have shown that the life of the cells could be about nine to ten months or more when lighter is used 10-15 times daily.

The gas lighter is very convenient to use. The filament-element being a noble metal wire, does not get oxidised in the atmosphere or get reduced in burning the gas. So life of the filament-element is indefinite if protected from physical jerks and damages. With a set of two dry-battery cells, the gas lighter can be used for about a year.

PLASTIC SLATE DEVELOPED

A process for making plastic slate has been developed by the R.R.L, (Jorhat), Assam. The process is very simple as it consists of laminating plastic sheets of desired thickness with a chemical formulation made of glass and some easily available chemicals. After lamination, the product is trimmed, framed and sold.

Atleast 10 million children (assuming a birth rate of 20%) start schooling every year. The basic writing material for any child is 'Slate'. The slate that is available in the market is made from slate stones. Of late, paper slates are also making their appearance in the markets. Due to the acute shortage of paper, not only primary school children but even students going to high school and colleges find great difficulty in getting their minimum requirements of note books etc. Even if they are available they are becoming costlier day by day. So any substitute that is available to save the use of paper would be a boon to the children and the students. A possible substitute is 'Plastic slate'. While the kids would find it very useful because they are unbreakable, the high school and college students may find it very useful at home while preparing for their studies. Hence though it is rather difficult to quantify the requirements for plastic slates, it can be very safely assumed that the potential for this is great.

The raw materials required for the process are :

(i) plasticised PVC sheet or acrylic sheet of 0.48 - 0.60 mm thickness.
(ii) colour paper
(iii) glass powder and some other chemicals

All are available indigenously.

The main equipment are :

(i) hot press :
    Working temp. 150°C
    Working pressure 500 P.S.I.
    Platen size 30 cm x 30 cm
(ii) hand shearing machine
(iii) mixing vessels

All are indigenously available.

CARDIAC CARE SYSTEM

Cardiac care system has been developed at the Electronics and Radar Development Establishment (ERDE), Bangalore.

Cardiac care system is used in monitoring and electrical therapy of cardiac emergencies, e.g. bradycardia, cardiac arrest, myocordial infarction, ventricular fibrillation etc. The unit consists of cardioscope, ECG amplifier, ECG recorder, heart rate meter, cardiac pace maker and DC Defibrillator.

The system which has been designed and developed at RDE, Bangalore is a trolley mounted mobile diagnostic-cum-therapautic unit incorporating such diagnostic aid as a 12 lead ECG amplifier with self-calibrating unit, a 5" diameter long persistance internally connected oscilloscope for display of ECG, a heart rate meter with alarm facility for setting the limits of the lower and the higher heart rates. The therapautic aids consist of an external/internal/transvenous cardiac pacemaker with demand-more facility and an internal/external DC defibrillator with manual or synchronised-operation-mode facility. A pen recorder is available for recording the ECG on paper.

The equipment is operated from 230V, 50 HZ single phase AC mains supply. Seven number of prototypes have been made which are working successfully in different hospitals and clinics. Its co-products are DC defibrillator with synchroniser, cardiac pacemaker, with demand system, heart rate meter, electrocardioscope, ECG recorder.

It is used for wheeling to the site of emergency for detection/monitoring and treatment of cardiac emergencies. The estimaied future demand, as given by Electronics commission, is about 1000 numbers in the Fifth Five-Year Plan.

The main components required are carbon resistors, potentiometers, capacitors, electrolytic capacitors, transistors, diode, zener diodes, relays, main transformers, auto-transformers, bridge rectifiers, choke, trolley, ECG electrodes, pacemaker electrodes, DC defibrillator electrodes and cathode ray oscilloscope. These are the main raw materials and all are available indigenously.

Due to relatively low turn over, it is necessary that the project should be taken up only by the firms who have the background, experience and standing in the production of professional grade systematised general electronic/medical electronic equipment. No special machinery is necesssary for manufacturing this equipment.

Major equipment required are: welding sheet-metal work, painting, engraving, front panel making and cabinet making facilities cutter, grinder, sander and blisher, transformer/chokes, winding and impregnation facilities, printed circuit cards shaping and drilling facilities and moulding/potting of high voltage components.

INDIA'S EXPORTS TO NON-ARAB AFRICA

India's exports to non-Arab Africa during the last four financial years were as under :

	(Rupees million)
1969-70	291.60
1970-71	398.10
1971-72	526.10
1972-73	427.20
1973-74 (April - September)	253.00

It will be observed that India's exports to non-Arab African countries had registered considerable increase during 1970-71 and 1971-72. This increase amounted to over 36 per cent and 32 per cent over the period 1969-70 and 1970-71, respectively. However, there was again shortfall during 1972-73 in these exports. Exports during the first six months (April-September) of 1973-74 were Rs. 253 million and are picking up.

Non-Arab Africa covers about 40 countries (i.e. the whole of Africa excluding Sudan, A.R.E, Libya, Tunisia, Algeria and Morocco). Over 80 per cent of the exports go to only eleven countries of the region, namely, Kenya, Tanzania, Nigeria, Ethiopia, Uganda, Zambia, Malawi, Mauritius, Ghana, Sierra Leone and Somalia. These countries are considered as real "growth points" in the region.

On a commodity-wise analysis, it is found that over 80 per cent of the exports fall within four groups viz. textiles, jute manufactures, engineering products and chemicals and allied products. Of these, the last two groups are the potential "group points" but textiles and jute manufactures are still important export sectors.

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The following are the main items of exports to non-Arab African countries.

(1) Spices (2) tea (3) tobacco unmanufactured (4) cereal and cereal preparations (5) crude vegetable materials (6) cotton yarn and thread (7) fabrics of art silk and synthetic fibre (8) cotton piece goods (9) made-up articles wholly or chiefly of cotton (10) rubber manufactures (11) paper, paper board and manufactures thereof (12) jute manufactures (13) manufactures of metals (14) iron and steel (15) machinery, other than electric (16) electrical machinery, apparatus and appliances (17) transport equipment (18) clothing (19) footwear (20) developed cinematographic films (21) miscellaneous manufactured articles and (22) postal packages.

India has trade agreements with Uganda and Cameroon. Negotiations for trade agreements are going on with Ethiopia, Kenya, Ghana and Zambia. A trade agreement with Tanzania was signed in December, 1972. Government of India have already ratified the Agreement.

Joint ventures have been recognised as one of the positive ways of fostering and promoting economic cooperation as part of the global strategy of development. Fourteen joint ventures are at present in operation in the various African countries in such diversified fields as engineering, chemicals, textiles, etc.

It has been India's experience that inviting key persons from Africa and showing them round industrial complexes in the country has produced deep impression on their minds about the Indian Industrial capabilities which they were not aware of before. In the recent past, India received such delegations from Tanzania, Zanzibar, Guinea, Ghana, etc. Similalry, delegations from India visited Tanzania, Zanzibar, Zambia and Kenya.

One of the methods to increase India's exports is participation in international exhibitions. India's participation is necessasily limited by financial and other considerations. Normally, India has been participating in three or four exhibitions every year. Her broad policy is to participate in exhibitions spread over different areas in Africa and the exhibitions are so chosen that over a period of time all important countries are covered.

The Economic Commission for Africa plays a very important role in the economic development of these countries. It has been found that the Commission wields considerable influence on the whole continent. India has, therefore, tried to maintain close coordination with the Commission including study of its documents, attendance at its main sessions and techinical assistance to the institution. □

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CABLES ON EXPORT FRONT

The export value of India–made equipment for distributing electricity, including insulated wire cables and electrical insulating equipment totalled nearly Rs. 61.30 million in 1973-74, accounting for nearly one - fifth of the total export value of Rs. 283 million of the entire group of electrical machinery, apparatus and appliances. The share of insulated wire cables in the total export realisation of the equipment for distributing electricity was Rs. 57.93 million while that of electrical insulating equipment was about Rs. 3.37 million. USSR, Singapore, Qatar, Hong Kong, Iran, Abu Dhabi and Dubai were among the major buying countries for insulated wire cables while overseas supplies of the insulating equipment were directed, among others, to Singapore Iraq, Ghana, Kuwait and Sri Lanka.

Contributing to the export effort in the line, M/s. Siemen's India Ltd., Bombay, has recently received an order for supply of high tension cables from Malaysia. Valued at Rs. 6 million, this contract is a repeat order as the firm has already executed one relating to supply of these cables worth Rs. 14 million. The firm is also entrusted with supply of high tension cables valued at Rs. 5 million to the Public Utility Board of Singapore.

Creditably, total exports of the firm are likely to attain a level of Rs. 30 million in 1974-75. These were limited to only a few thousands in 1968 when it entered the export field for the frist time. Initially, the firm started with exports of only PVC wires. It has now diversified its export range to high tension cables, transformers, motors, switchgear, electro-medical equipment, instrumentation measuring, testing and other allied equipment for industrial projects.

Besides physical exports, the firm is also supplying know-how for projects like textile, cement, steel and paper mills to the neighbouring countries like Malaysia, Iraq, Kuwait, Kenya, Libya and Sudan. Orders on hand with the firm cover electrical equipment for textile and spinning mills being set up in Afghanistan, Thailand and Bangladesh.

The cable and wire industry constitutes a significant sector of the Indian engineering industry in India. There are, at present, 11 units engaged in the manufacture of power cables (PVC/PILC and cross linked polyethylene) with an installed capacity of 23,500 Kms. per annum. The capacity covered by industrial licenses is 27,359 Kms. Besides, letters of intent have been issued for an additional capacity of 5950 Kms. Actual production was of the order of 17,100 Kms. The bulk of production consists of PVC power cables. Production of PILC power cable is intended mostly for export purposes.

The manufacture of power cables with copper conductors is officially not encouraged unless intended for export. The power cables produced for domestic uses are to be based on aluminium conductors.

As regard PVC/VIR cables, the industry has an installed capacity of 1281 million core metres spread over 27 units. The licensed capacity is of the order of 1338 million core metres. Letters of intent have been issued for an additional capacity of 128 million core metres. Production in 1973 was of the order of 694 core metres. Under the current industrial licensing policy, house wiring cables are reserved for the small scale sector. Proposals for foreign collaboration for the manufacture of specialised types of cables could be considered on merits.

INDIAN BICYCLES POPULAR IN FOREIGN MARKETS

In tune with the popularity of Indian bicycles in foreign markets, one of the leading manufacturers in the line has recently made breakthrough in Australia by bagging a trial order for supply of 1,000 bicycles from that country. The Atlas Cycle Industries limited of Sonepat (Punjab) who have secured this order are already exporting their products to a number of countries including Australia, Bulgaria, Afghanistan, Iran, Bangladesh, Indonesia, Kenya, Nigeria, Tanzania, Uganda, Kuwait, Iraq, Morocco, Syria, Dubai and even such sophisticated markets as USA and UK. The popular brands of cycles manufactured by the Sonepat firm include 'Atlas', 'Eastern Star', 'Army' 'Zebra' and 'Pelican'.

Indian exports of bicycles and parts amounted to Rs. 146.90 million in 1973-74 against Rs. 105.50 million in 1972-73 and only Rs. 80 40 million in 1971-72. Of the total export earning in 1973-74, complete bicycles and other cycles fetched Rs. 26.74 million while bicycle parts contributed as much as Rs. 119.26 million in foreign exchange. Quantitatively, 172,352 complete bicycles were exported during the year. Iran, Nigeria and USA, were the leading buyers.

In the group of bicycle accessories and parts, freewheels were supplied to about 40 countries including Italy, Indonesia, Singapore and Thailand at Rs. 10.37 million while bicycle chains earned Rs. 9.70 million from about the same number of countries of which Nigeria, France, USA and UK were prominent. The export

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value of other accessories and parts was : rims Rs. 3.25 million, spokes Rs. 4.64 million, saddles Rs. 1.44 million, hubs Rs. 2 million and other parts Rs. 88 million.

In India, there are presently 14 units engaged in the manufacture of complete bicycles. The licensed capacity is placed at about 3.73 million numbers. Letters of intent have been issued for an additional capacity of 9.12 million numbers. Actual production of bicycles was of the order of 2.6 million numbers in 1973-74 as against 1.80 million numbers in 1972-73 and 2.88 million numbers in 1971-72. The organised sector of the industry accounts for about 80 per cent of the total bicycle production. Additionally, the small scale sector has over 300 units engaged in the assembling of bicycles and manufacturing bicycle parts and accessories. The capacity for complete bicycles in the small scale sector is 0.50 million numbers while the current production level is placed at 0.40 million numbers.

In regard to bicycle ancillaries and parts, the production in terms of value was Rs. 150 million in 1973 as against Rs. 142 million in the preceding year. A comprehensive range of products, such as, bicycle chains, free-wheels, hubs, spokes, nipples, rims, mudguards, saddles and chain wheels are manufactured by the industry.

BASE METAL SAFES IN EXPORT TRADE

Among a large number of iron and steel manufactures, even items like fire and burglar resisting safes, safe deposit lockers and strong room doors and vault doors figure in India's export trade. M/s. Steel Age Industries Ltd. of Mazagon, Bombay are one of the units engaged in this line of manufacture contributing to the export effort in this field. The Bombay firm is reported to have secured a sizeable order for supply of big size vault doors valued at Stg. £ 85,000 from Rafidain Bank of Baghdad (Iraq). Creditably, the order was bagged in the face of stiff competition from other concerned manufacturers throughout the world.

Besides various types of safes, safe deposit lockers and strong room doors, the firm is also exporting fire extinguishers, ranging from 2 gallon to 10 gallon. These are imported by a number of countries including Iraq, Hong Kong, Singapore, Malaysia, Indonesia, Sri Lanka, Uganda, Kenya, United Arab Emirates and Bahrein Islands.

EXPORT PERFORMANCE AND POTENTIAL

INDIA'S PARTICIPATION IN TEHRAN TRADE FAIR

Recent participation in the Tehran International Trade Fair (September 17–29, 1974) has enabled India to secure substantial business worth over Rs. 26 million. Further business of over Rs. 5 million is also reported to be under negotiation.

One of the 80 participating firms in the Indian Pavilion at the Fair, M/s. Mazagon Docks Ltd. has secured an order for the construction of 24 barges for Aryan National Shipping Lines of Iran, costing Rs. 24.10 million. Another participant, M/s. Bharat Heavy Electricals Limited utilised the opportunity to negotiate with the Iranian Authorities to set up two multi-million dollar power stations. Also the participation of Shipping Corporation of India has facilitated them to negotiate with M/s. National Aryan Shipping Lines of Iran to float a joint shipping company.

In addition to the above business, firm orders worth over Rs. 20 lakhs have been booked for a variety of other products including diesel engines, bicycles, tea, padlocks, grinding wheels, planetary mixer, power filling and strip packaging machines, steel bars, fluorescent chokes, duplicating machines and hardwares. Ten of the participants are reported to have established agencies in Iran for selling their products, thus making a lasting entry into that market. Business is under negotiation for other items like diesel engines, cables, clinical thermometers, compressors, steel forgings, bolts and nuts and tea. Also nearly 150 trade enquiries were received for a broad range of products, especially engineering and chemical items.

India was among the 30 participating countries in the Fair, which included U.S.A., U.S.S.R and other East European countries, Japan, Federal Republic of Germany, France, Sweden and Italy. Indian Pavilion which occupided a large area of nearly 1400 sq. metres displayed a cross-section of the country's export products, particularly engineering manufactures. About 7 million of visitors are reported to have visited the Fair and more than half of them visited the India Pavilion.

India celebrated its National Day on September 26, 1974 which was attended by several senior officials of the Government of Iran and leading businessmen of Iran. All the important news Dailies in Iran gave wide coverage to the Indian Pavilion, both in English and Farsi. Besides Iranian businessmen, a number of visitors from other countries also evinced keen interst in Indian products.

BOOST IN PEARLS AND PRECIOUS STONES EXPORT

India's export trade in pearls, precious and semi precious stones has registered an impressive increase in recent years. From Rs. 515.15 million in 1971-72, the export value rose to Rs. 779.30 million in 1972-73 to attain a still higher level of Rs. 1067.50 million in 1973-74.

Diamonds (except industrial, not set or strung) constituted the most popular item for the buyers overseas. This single item alone earned foreign exchange amounting to Rs. 867 million. Of this, the share of cut diamonds was the maximum at Rs. 846.83 million while uncut diamonds accounted for foreign exchange earning of nearly Rs. 20.21 million. Hong Kong emerged as the best market for cut diamonds during the year replacing Belgium, the traditional buyer, which was the major market in the preceding year. Hong Kong's purchases during the year amounted to Rs. 191.60 million while intake of Belgium, the second best buyer, was of the order of Rs. 180 million. USA was the third significant destination. Its purchases totalled Rs. 167.92 million, followed by Japan at Rs. 80.75 million, Netherlands at Rs. 50.45 million, UK, at Rs. 36.76 million, Singapore at Rs. 34.63 million, Israel at Rs. 28.37 million, Switzerland Rs. 19.60 million and France Rs. 17.76 million. Australia, Czechoslovakia, German Federal Republic, Lebanon, Malaysia, Spain, Sweden and Syria were among other important buyers. For uncut diamonds, Belgium was the topmost importer which bought worth Rs. 4.58 million, followed by Japan at Rs. 3.60 million, Hong Kong at Rs. 3.47 million and UK at Rs. 3.45 million.

Apart from diamonds, pearls (not set or strung) brought in Rs. 18.28 million while synthetic reconstituted precious and semi-precious stones fetched Rs. 7 million. In the former category, pearls of different varieties, such as, natural unworked and cultured were supplied mainly to USA, Hong Kong, Dubai, Japan and France while for the latter Switzerland and France were the leading destinations.

Other precious and semi precious stones (not set or strung) supplied abroad included emerald and felspar (uncut) and other natural precious and semi precious stones (cut) and natural semi precious and precious stones (uncut). These fetched foreign exchange to the tune of Rs. 174.76 million. Of this, the foreign exchange earning of emeralds and felspars (uncut) together was Rs. 7.38 million. Natural precious and semi precious stones (uncut) brought in Rs. 32.67 million while cut precious and semi precious stones contributed the bulk at Rs. 134.70 million. France, UK, Hungary, Japan and Singapore were the major importers for uncut precious and semi precious stones. In addition to these countries, Spain, Netherlands and Hong Kong were also included among leading destinations for precious and semi precious cut stones. Emerlads were supplied mainly to USA, Japan and Hong Kong while Switzerland was the major importer for uncut felspar.

EXPORT POSITION IN TEA

Export earning of tea and mate from India amounted to Rs. 1448.50 million in 1973-74. In the preceding year, it was slightly more at Rs. 1472.90 million.

During the year under review, black tea leaf in bulk brought in Rs. 1299.15 million as against Rs. 1333.55 million in 1972-73, black tea dust in bulk Rs. 17.70 million against Rs. 29.75 million, black tea in packet (upto 20 Kg.) Rs. 103.35 million against Rs. 89.50 million and green tea Rs. 28.32 million against Rs. 20.10 million.

During 1973-74, Black tea leaf in bulk was imported by a large number of countries among which significant were UK Rs. 354.65 million (50,824 tonnes), USSR Rs. 325.30 million (37,358 tonnes), Netherlands Rs. 100.15 million (14,416 tonnes), Arab Republic of Egypt Rs. 60.80 million (9554 tonnes), Federal Republic Germany Rs. 60.30 million (5023 tonnes), USA Rs. 53 million (7528 tonnes), Iraq Rs. 50.80 million (8123 tonnes), Iran Rs. 45 million (4003 tonnes), Ireland Rs. 39.60 million (5200 tonnes), Afghanistan Rs. 38 million (5301 tonnes) and Poland Rs. 33.40 million (5396 tonnes).

Black tea in packet upto 20 Kg. was purchased by about 48 countries during the year. Sudan constituted the principal buyer at Rs. 41.65 million (6043 tonnes), followed by Dubai at nearly Rs. 14 million (1332 tonnes), Bahrein Islands Rs. 7.80 million (833 tonnes), Afghanistan Rs. 8.95 million (964 tonnes) and Qatar Rs. 4.55 million. Among other buyers, Nepal, USA, Kuwait, Abu Dhabi, Jordan, Muscat and Saudi Arabia were significant.

With an intake of 419 tonnes valued at Rs. 4.40 million, Afghanistan topped the list of buyers of black tea dust in bulk. Arab Republic of Egypt was the second important destination at Rs. 2.33 million (354 tonnes), followed by Qatar Rs. 2.24 million (278 tonnes) and UK Rs. 1.15 million (175 tonnes).

Afghanistan again constituted the topmost buyer of green tea, having imported the bulk of Indian supplies at Rs. 20.75 million (3360 tonnes). Japan followed Afghanistan by purchasing worth Rs. 6 million (475 tonnes). USA and Federal Republic of Germany were important among other markets.

INDO-GABON TRADE AND ECONOMIC RELATIONS

The recent visit of the President of the Republic of Gabon, Mr. Albert Bernard Bongo to India and his discussions with India's Prime Minister and other Ministers have laid the foundation for closer economic, commercial and cultural relations between the two countries. The protocol signed between the two countries enlists several industries that the Gabonese Government wishes to establish with Indian expertise and private investment. The list includes establishment of tobacco, leathergoods, soap, glass and plywood industries through direct private investment in Gabon.

The Joint communique on the discussion between President Bongo and Prime Minister Indira Ghandhi covers a wide field in technical and economic cooperation between the two countries. Teams are likely to be sent from India by the end of the year to study and determine practical measures for developing mutually beneficial cooperation in the fields of industry, agriculture, mining, petroleum, fisheries and education. India is interested in undertaking turn-key jobs in Gabon or to sub-contract for the supply of machinery and equipment for refineries, iron ore, mining, production of natural gas, cement plants, textiles and paper plants. Gabon will also be helped in the production of sophisticated machine tools. There is also a possibility of setting up joint ventures in fisheries in Gabon. Consultancy services may also be extended for exploration of oil in Gabon.

So far as trade prospects between the two countries are concerned, there are possibilities for supply of several commodities by both the countries. Gabon's import interests can be met by India as it is in a position to export all the items which Gabon is importing from other sources. At present Gabon's imports consist abroad. Two and a half decade ago India had to depend solely on imported processed foods. With the gradual increase in the standard of living in the subsquent years, particularly in the post independence period under various Five Year Plans, food habits of common people in India have undergone considerable change. This too has given a fillip to the growth of this sector in India.

The industry's range of production covers a sizeable number of processed food products which include biscuits, confectionery, floor milling, bread, breakfast food like pearl barley, corn flakes and oat flakes, aerated waters, malt extracts, guargum, fruits and vegetables, meat products, sorbitol, protein isolates, filter rods, infant milkfood, milk powder, cigarettes condensed milk, malted milk food, starch, dextrose, liquid glucose, enzymes, drinking chocolates, chocolate, cocoa powder, instant coffee, instant tea, ice cream and high protein foods.

Most of the food industries are depending upon agro-products as basic source of raw materials. A mixed production trend has been noticed during 1972-73, as the year witnessed consistent drought conditions througout the country. Despite this major constraint, a number of food processing industries witnessed rise in production. For instance, production of confectionery items improved to 21,600 tonnes (1973) from 18,000 tonnes (1972) and 17,385 tonnes (1971). In 1973, there were 24 units engaged in the line with combined installed capacity of 37,752 tonnes while in 1972, in all 23 units were sharing an installed capacity of 37,152 tonnes.

Considerable progress was also achieved in the production of bread during the year. From 69,185 tonnes in 1972, the output went upto 80,000 tonnes in the following year. The installed capacity in the line improved from 78,020 tonnes in 1972 to 89,684 tonnes in 1973 and the number of units also increased from 14 to 15. Of the total units in 1973, as many as 9 were that of "Modern Bread". In 1973, in the range of breakfast food, the production of pearl barley was maintained at 1972's level at 1200 tonnes. The capacity of 6590 tonnes was being shared by 4 units in the line during the year. The output of cornflake indicated marginal decline during the year but that of oat flakes declined heavily. Production of guargum was also more or less at the level of 1972 (15,000 tonnes). During the year, there were 5 units engaged in the production of guargum having a total capacity of 26,100 tonnes.

In the same year, in all 27 units were producing fruits and vegetables in the organised sector with an installed capacity of nearly 98,000 tonnes and their production was estimated at 25,600 tonnes as against 24,740 tonnes in the year before.

A marginal progress was achieved in the field of meat products too. The output went up to 500 tonnes (4 units) from 428 tonnes (4 units). In both these years, the installed capacity remained static at 1600 tonnes.

The output of sorbitol also looked up from 1450 tonnes in 1972 to 1770 tonnes in the following year. During both the years a sole unit having a capacity of 2250 tonnes was engaged in the production.

A sizeable increase was recorded in the output of infant milk food during 1973 which nearly doubled to 20,000 tonnes from 10,543 tonnes. With the addition of 2 more units in 1973, the number of factories engaged in the production went up from 6 in 1972 to 8 in the year under review. Alongwith this, the installed capacity also improved to 21,585 tonnes from 20,985 tonnes in the preceding year.

From 1037 tonnes in 1972 the output of filter rods rose to 1600 tonnes which was nearly 90 per cent of the installed capacity of the two units in the line at 1800 tonnes.

The output of cigarettes has also gone up from 62,015 million pieces in 1972 to 63,800 million pieces in 1973. Although the number of units engaged in the production remained at 16 in both these years, the installed capacity in the line was enhanced considerably from 59,490 million pieces (1972) to 67,200 pieces (1973).

The domestic demand for malted milk-food has been increasing at a fast rate in recent years. During 1973, the production in this line more or less was maintained at the preceding year's level. The output in the respective years was 12350 tonnes, against 12,900 tonnes. During the year, there were 13 units engaged in the production and their installed capacity was of the order of 25,785 tonnes.

Apart from the above items, dextrose, enzymes, drinking chocolates, chocolate, instant coffee, instant tea and high protein foods were the specific food products the output of which improved during 1973.

However, production in respect of many other products declined during the year. For example, the output of biscuits came down to 66,600 tonnes (1973) from 69,030 tonnes (1972), floor milling to 1.97 million tonnes from 2.92 million tonnes, aerated water to 987 million bottles from 1965 million bottles, malt extracts to 1547 tonnes from 2664 tonnes, protein isolate to 110 tonnes from 240 tonnes, milk powder to 12,350 tonnes from 12,900 tonnes, condensed milk to 6150 tonnes from 8960 tonnes, starch to 92,000 tonnes from 106,775 tonnes, liquid glucose to 29,872 tonnes from 33,352 tonnes, ice cream to 3.8 million litres from 4.2 million liters and cocoa powder to 35 tonnes from 51 tonnes.

MANUFACTURE OF CIRCUIT BREAKERS

In India, there are at present 22 units, including public sector, two in the manufacturing high and low tension circuit breakers. The licensed capacity for LT circuit breakers is 20,313 numbers and for HT 22,750 numbers. This capacity has also been installed. The indigenous production covers circuit breakers upto 220 KV. The production during 1972 was of the order of 10,890 numbers of LT and 8248 numbers of HT circuit breakers. Letters of intent have been issued for capacity of 24,602 numbers of LT and 22,750 numbers of HT circuit breakers.

Imports of circuit breakers is limited to certain specialised applications. Imports during 1971-72 were of the order of nearly Rs. 2 million while exports during the same period were to the extent of Rs. 0.75 million.

According to a Sub-Committee of the Development Council for heavy electrical industries, the demand for circuit breakers in 1978-79 is expected to be of the order of 15,000 numbers for HT and 32,000 numbers for LT breakers. For LT circuit breakers, although there is a gap between the estimated demand and installed capacity, the need to create further capacity can be determined only after assessing the progress of the new schemes approved.

There has been a technological trend towards moulded circuit breakers as against the conventional type of LT circuit breakers. Proposals for the manufacture of these could be considered on merits. The major portron of the present production partains to oil circuit breakers. Indigenous range, however, covers minimum oil circuit breakers, air-brake circuit breakers and air-blast circuit breakers. The existing manufacturers in the field have had the benefit of foreign collaboration and have acquired the technology. Import of technology may be considered on merits, particularly for the moulded types.

SPOTLIGHT ON RAYON GRADE PULP INDUSTRY

India's rayon grade pulp industry has in its infrastructure 3 rayon grade pulp mills with a total capacity of 117,600 tonnes per year. Production during 1970, 1971 and 1972 has been 78,000 tonnes, 49,000 tonnes and 84,500 tonnes respectively. These units mainly cater to the requirements of staple fibre yarn and filament rayon yarn.

Imports have been 28,900 tonnes (Rs. 47.7 million) during 1969-70, 22,570 tonnes (Rs. 42.8 million) during 1970-71 and 45,470 tonnes (Rs. 83.8 million) during 1971-72 and include tyre cord pulp.

An additional capacity of 100,400 tonnes has been approved in this field. This would emerge from 4 schemes of which 2 envisage partial production of tyre cord pulp.

Conifers constitute the conventional raw material in other countries for the manufacture of rayon grade pulp. Availability of conifers in India is limited to certain parts in the Himalayan range which are generally inaccessible. Apart from the economies of the cost of the extraction of Indian conifers from these regions, rapid regeneration and sustained availability also pose some problems.

Present production of rayon grade pulp is based on bamboo and eucalyptus in Kerala, Tamil Nadu and Mysore.

According to the Task Force on Paper, Pulp and Allied Industries, the demand for rayon grade pulp by 1978-79 will be 205,000 tonnes, corresponding to an installed capacity of 230,000 tonnes per year. There is, accordingly, scope for further capacity. Such additional capacity will need to be conceived particularly in terms of tyre cord grade pulp, notwithstanding the development in respect of nylon tyre cord. While the extent of additional capacity requirements with reference to 1978-79 estimates might be covered by a single scheme, the long gestation period in this field, particularly, in respect of raw materials, project finance and other considerations would indicate the need for advance consideration of additional capacity which may arise with reference to the period following 1978-79.

The capital investment for a project of 45,000-50,000 tonnes annual capacity will be of the order of Rs. 150 million. Capital equipment is largely indigenous except for certain specialised items.

Proposals for foreign collaboration for manufacture of tyre cord yarn are considered on merits,

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PLASMA CUTTING TORCH AND PLASMA SPRAY TORCH

National Research Development Corporation of India offers technical know-how for the manufacture of Plasma Cutting Torch and Plasma Spray Torch. The torch employs plasma arc process used for cutting and welding of metals. By this process higher temperature and jet velocities are obtained and almost any metal can be cut and welded. These torches have so far not been produced in the country.

Plasma Cutting Torch, developed by the Bhabha Atomic Research Centre, Bombay (BARC) consists of tungsten disc silver soldered to the copper cathode holder and a water cooled copper nozzle. The nozzle acts as the anode of the torch. Two electrodes are separated by an araldite insulator which also has a tangential inlet for the plasma gas in the vortex stabilised torch. The torch is equipped with a D.C. power source, an ignition system, a control unit for initiating, maintaining and terminating the torch operation, a carriage for the plasma cutting torch and a cooling water pump. The torch has a provision for dual flow and multiport nozzle attachments for additional gas flow. An additional gas flow, surrounding the main arc, shields the work piece and oxidation is avoided. The dual flow also avoids double arcing.

The torch developed by BARC has given a high rate of cutting with good quality when used for cutting stainless steel, mild steel, other alloy steels and aluminium. The quality of cutting depends upon the gas used. Different gases used with this torch produced varying degrees of smoothness on the cut surface.

All the plant and machinery required for manufacturing the torches, such as, precision lathe, precision drilling machine, universal milling and grinding machine and other electrical equipment are available indigenously.

INDIGENOUS FLOCCULANT FOR SUGAR CANE JUICE CLARIFICATION

National Research Development Corporation of India offers technical know-how for manufacturing a substitute of imported flocculants used for clarification of sugar-cane juice in the manufacture of sugar. The use of flocculants in the manufacture of sugar not only quickens the process but also increases the yield of sugar.

Indian sugar industry has been using imported flocculants but on a limited scale because of import restrictions. The requirement of the entire sugar industry in the country, however, is estimated at 2,000 tonnes per annum. Accordingly, the indigenous substitute has a wide market.

The indigenous flocculant, a polymer of acrylamide, developed by the National Chemical Laboratory, Poona, substitutes Separan AP-30. Acrylamide monomer is prepared from acrylonitrile which is palymerized in the presence of a catalyst followed by hydrolysis with alkali. The reacted mass is precipitated in the presence of alcohol and thereafter it is washed and dried.

All the raw materials with the exception of acrylonitrile are indigenously available. Even acrylonitrile is expected to be produced within the country by IPCL in the next few years. The price of the imported flocculant is around Rs. 70 per kg. whereas the indigenous substitute is expected to be marketed at a cheaper rate.

Estimated investment for a plant with an annual production capacity of 50 tonnes, is estimated at Rs. 1.7 million.

ELECTRICAL RESISTANCE ALLOY FOR HEATING ELEMENTS

An indigenous alloy dispensing with nickel and cobalt has been developed at the National Metallurgical Laboratory, Jamshedpur for the production of electrical heating elements which are at present imported. The alloy would substitute conventional electrical heating elements, viz. Kanthal and Nichrome, containing nickel and cobalt, which are not available in India. The alloy can withstand temperatures upto 1150°C as shown by accelerated life tests as per ASTM standard; besides, the welding parameters of the alloy are such as to ensure continuous production. The know-how has been licenced to Cable Works Ltd., who have set up a production plant at Faridabad. In-plant trials conducted at the works, the alloy was successfully produced and fine gauge wires were processed from it.

INDO-GDR TRADE RELATIONS

The German Democratic Republic occupies a prominent place amongst India's trading partners in Eastern Europe. Trade between India and the GDR is governed under bilateral trade and payments protocol signed in 1954, initially for a period of two years and extended periodically thereafter. The latest trade and payments protocol was singed in 1971 and is valid up to 31st December, 1975. Before the conclusion of these protocols, i.e. prior to 1954, the volume of trade between the two countries was very in-significant. It shot up to Rs. 131 million in 1961 and to Rs. 414.66 million in 1971. This phenomenal increase in volume of trade during a period of two decades became possible as a result of changing over to a system known as 'Rupee Payment'. Uuder this arrangement, all payments, commercial and non-commercial, have been made in non-convertible, Indian rupees. In 1972 and 1973, India's exports to the GDR were of the value of Rs. 337 million and Rs. 392 million.

India's major exports to the GDR consist of traditional items, such as, de-oiled cakes, crushed bones, tanned and semi-tanned hides and skins, jute manufactures, coffee, tea, spices, etc. Recently, non-traditional items and other sophisticated engineering goods have been introduced in the GDR market and it is expected that their share would gradually increase in the years to come. India's major imports from GDR mainly consist of muriate of potash; cinematographic films (raw), including jumbo rolls; X-ray films including jumbo rolls; photographic and sensitised material, amateur roll films; printing machinery and steel and steel products, etc.

The tade plan for 1974 envisages a total trade turnover of Rs. 824 million. This is higher by about 25 per cent over the 1973 figure. Indian imports from GDR are envisaged at Rs. 423 million while exports to that country are estimated at Rs. 401 million. To secure better implementation, ceatain items of crucial importance to both the countries have been mentioned in terms of quantities instead of value. Quantitative provisions for import from the GDR have been made in the case of fertilizers, steel and steel products and essential chemicals. Likewise, there are quantitative provisions for India's exports to the GDR for items, such as, oilcakes, crushed bones, tanned and semi-tanned hides and skins. The hard core of the Indo-GDR trade consists of imports of muriate of potash from GDR and export of groundnut and other de-oiled cakes and crushed bones from India.

India has been regularly participating in the Annual International Spring Fair in Leipzig. As a result of this participation, Indian exporters have been able to export a large number of new non-traditional items to GDR. Consequently, India's exports of non traditional items have been showing an uptrend trend. The GDR under its Five Year Plan has aimed in the industrial field to give priority to the electrical, engineering and electronics industries which are likely to expand by 40 to 50 per cent. The GDR market offers a promising scope for India's products. Recently, the State Trading Corporation (STC) has revived the export of leather footwear to the GDR market and there is ample scope for developing trade in this field. The Minerals and Metals Trading Corporation (MMTC) has a long term contract for the import of muriate of potash from the GDR.

India's relations with GDR are not confined to trade and economic matters alone. They go beyond that. In 1971, along with Trade Plan for 1971 a protocol on scientific and technical cooperation was concluded. It envisaged exchange of experts and trainees as well as relevant information in the sphere of science and technology in different fields. Among others, it also envisaged closer cooperation in the field of product develoment and adaptation as well as market research for purposes of developing bilateral trade and also for joint ventures in third countries. India and GDR have also been cooperating in the field of shipping.

The bonds of friendship that exist between India and GDR have been strengthened as a result of India's according full diplomatic status to that country. There is no iota of doubt that trade between the two countries would increase mani-fold as the years pass by. ☐

Attention

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ALUMINIUM CONDUCTORS TO IRAQ

An export order has been secured recently by M/s. Aluminium Industries Ltd. (ALIND), Cochin to supply alumininum conductors to Iraq. Valued at Rs. 14 million, the order has been bagged in the face of stiff international competition. This is in addition to the order valued at Rs. 7 million, secured earlier by the firm from National Electricity Administration of Baghdad (Iraq). In fact, conductors worth about Rs. 3 million have already been shipped by them to Iraq.

The firm's exports for 1973-74 amounted to Rs. 5.6 million. It hopes to supply at least Rs. 10 million worth of conductors to foreign markets during the current financial year, out of the Rs. 23 million worth of orders on hand. Besides wires and cables, the firm is also exporting wire working machines and high voltage switchgears.

India's exports of steel reinforced aluminium conductors (ACSR) amounted to Rs. 27.11 million during 1973-74. During the year, Iran was the leading market at Rs. 7.48 million, closely followed by U.S.S.R. at Rs. 7.16 million. Libya, Tanzania, Philippines and Zambia were the other important destinations.

Categorised as one of the priority industries, ACSR/AAC industry has an installed capacity of 106,850 tonnes spread over 40 units including 2 in the public sector. Actual production was of the order of 58,000 tonnes in 1973 compared to 23,600 tonnes about a decade back in 1960–61.

Besides ACSR/AAC conductors, the range of items produced by the cable and wire industry in India, includes winding wires, PILC power cables, PVC power cables, PVC/VIR cables, dry core cables, coaxial cables and bare copper conductors. During 1973, installed capacity and actual production was 201,974 tonnes and 15,000 tonnes respectively for enamelled winding wires and 15,580 tonnes and 5200 tonnes in respect paper covered winding wires. The figures for other varieties were : PILC power cables and PVC power cables 21,310 tonnes and 15,000 tonnes; PVC/VIR cables 1215 MCM and 620 MCM; drycore cables 4,000 kms and 3,000 kms; coaxial cables 4250 kms and 800 kms and bare copper conductors 14,200 MT and 1000 MT.

INDIA-MADE VEHICLES POPULAR ABROAD

India-made road motor vehicles are gaining increasing popularity in foreign markets. Recently a contract has been secured by India from Zaire (former Congo, Leopoldville) for supply of 500 comet single decker buses valued at about U.S. $ 10 million; the order is reported to be largest recent contract for supply of Indian buses to any foreign market. The order has been bagged by M/s. Ashok Layland (Ennore, Madras) and the supplies will start in about six months to be completed in about ten months thereafter.

Lately, the Madras firm has also succeeded in making a breakthrough in Oman. It has secured an order for the supply of 20 vehicles and this is likely to be followed by another order for 40 vehicles. About 97 Tata vehicles from India are already plying on Oman roads.

A Punjab firm, M/s. Gurmukh Singh and sons of Ludhiana have also secured export order from Iran and Syria for supply of automobile parts valued at over Rs. 3 million. The Ludhiana firm is to supply bolts, nuts, shackle pins and malleable castings to its counter parts in Iran and Syria.

Total export earning of Indian road motor vehicles amounted to Rs. 150.25 million in 1973-74. Of this, the export value of buses (assembled or otherwise) totalled Rs. 19.20 million. Other allied products, namely, lorries and trucks constituted an equally significant item of export dynamism. These were supplied abroad at Rs. 20.10 million during the year. Motor vehicle bodies, chassis and accessories were also prominent in export trade. Their foreign exchange earning during the year totalled Rs. 83.70 million.

Besides complete vehicles, such as, trucks, buses, lorries, motor cars, jeeps, scooters and tractors, the automobile industry in India is also turning out almost a complete range of ancillaries and parts. The production in the line has shown an uptrend year after year. The output of commercial vehicles rose to about 42,400 numbers in 1973 from 37,460 numbers in 1972 while the outturn of jeeps improved to 13,070 numbers from 12,590 numbers. Similarly, the production of scooters, motor cycles and mopeds was up at 150,003 numbers in 1973 compared to 133,500 numbers in the preceding year.

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EXPORT SUCCESS IN STEEL PIPES AND TUBES

Of the various iron and steel products made in India, the export earnings of iron and steel tubes, pipes and fittings have revealed an impressive increase during 1973–74. During the year, the export value of these products more than doubled to about Rs. 243 million from Rs. 112 million in 1972-73.

In the total export realisation of the group in 1973-74, the share of galvanised and non-galvanised tubes and pipes of iron and steel (except cast iron welded) was as much as Rs. 185.55 million. Saudi Arabia, U.K., Dubai, Iraq, Abu Dhabi, Federal Republic of Germany, Iran, Jordan, Kuwait, Libya and Qatar were the major export destinations. The other principal variety supplied abroad during the year included tubes and fittings of iron or steel. This earned Rs. 35.68 million in foreign exchange, mainly from Czechoslovakia, Iraq, Poland and Singapore.

Contributing to the export effort in the line, one of the manufacturers in South India M/s. Sakthi Pipes Ltd. (Plot No. 6, Popes Garden, Madras) are currently having on hand orders worth £ 75,000 from Singapore. The firm has already shipped pipes worth Rs. 1,50,000 this year to Singapore in two consignments of 25.5 and 100 tonnes respectively. Another consignment of 100 tonnes is expected to have been despatched during the last month.

The firm's products are reported to have evoked keen trade interest not only in West Asian and African countries but also in the sophisticated markets of USA, Canada and Western Europe. By the end of this year, they expect to finalise orders valued at about Rs. 3 million from Canada and Rs. 5 million from USA. They are also expecting sizeable orders from Middle East and African countries, especially Nigeria, Algeria, Kenya and Tanzania. In fact, the firm is capable of undertaking export commitments throughout the world as their pipes are manufactured conforming to British standard specifications, International and American standards, besides Indian standard specifications.

The firm's output in 1973-74 was about 12,000 tonnes which was much higher than the production reached in any previous year. The production tempo is likely to improve further consequent on the firm's efforts to strengthen the melting section of their plant by putting up modified melting units and additional equipment in the testing and finishing sections.

EXPORT PERFORMANCE AND POTENTIAL

RECENT TRENDS IN INDIA'S EXPORT TRADE

During the first five months of 1974-75 (April-August), India's export trade including the re-exports provisionally amounted to Rs. 12,650 million showing an increase of Rs. 4130 million (48 5 per cent) over the exports of Rs. 8520 million in the corresponding period of the preceding year. The country's import bill during the same five months of 1974-75 at an estimated Rs. 14070 million showed an increase of Rs. 4980 million over the imports of Rs. 9090 million during the corresponding period of the preceding year. In effect, the gap in India's foreign trade increased from about Rs. 580 million during April-August 1973 to Rs. 1420 million during the same period of 1974. According to provisional figures so far available, it appears that the items which contributed to the increase in exports included cashew kernels, tobacco, oils and fats, spices, jute manufactures, finished leather, chemicals and allied products. It is also understood that exports of other items like iron and steel and cement are also picking up well. Exports of sugar during April-August 1974 amounted to 182,000 tonnes valued at Rs. 720 million against export of about 30,000 tonnes valued at Rs. 37 million in the corresponding period of 1973. Exports of cotton textiles (mill-made) during the same period were higher at Rs. 1110 million as compared to Rs. 650 million during April-August 1973.

Over the last five years, India's export trade has witnessed a continuous rise. From a level of Rs. 13,580 million in 1968-69, the export value improved to Rs. 24,830 million in 1973-74 which indicates an increase of about 83 per cent. In other words, the average rate of export growth has been of the order of 13.2 per cent per annum in the last five years. The compound rate of growth for the period works out at 12.8 per cent as against an annual rate of growth of 7 per cent envisaged in the Fourth Five-Year Plan period, beginning from 1969-70.

Year	Imports		Exports (including Re-exports)	
	Rs. million	Rate of growth%	Rs. million	Rate of growth%
1968-69	19,086	—	13,579	—
1969-70	15,827	—17.1	14,133	+ 4.1
1970-71	16,342	+ 3.3	15,352	+ 8.6
1971-72	18,245	+11.7	16,082	+ 4.8
1972-73	18,674	+ 2.4	19,708	+22.6
1973-74	29,209	+56.4	24,832	+26.0
1973-74 (April-August)	9,092	—	8,516	—
1974-75 (April-August)	14,069	+54.7	12,651	+48.5

Although the rate of export growth was rather slow in the three years ended 1971-72, the pace was accelerated in 1972-73 and 1973-74 when the export value improved by 22.6 per cent and 26 per cent respectively. The trend in 1974-75 as indicated above is also encouraging.

The country's import bill was the lowest in 1969-70 at Rs. 15,830 million when it recorded a decline of 17 per cent over the previous year. Since then, however, imports showed an upward trend - these rose by 11.7 per cent in 1971-72 and increased marginally in 1972-73, but during 1973-74 these amounted to Rs. 29,210 million, thus recording a sharp rise of 56.4 per cent. The import bill was affected by a substantial increase in international prices of a number of commodities that figure prominently in India's import trade. Added to this was the country's larger requirements of items like foodgrains, petroleum products, fertilizers, non-ferrous metals, newsprint, iron and steel and chemicals. The uptrend in imports continued through 1974-75 also as indicated above.

A quick commoditywise review of India's export trade during the five-year period 1969-70 to 1973-74 would indicate that the major portion in the growth of export earnings principally emerged from engineering goods, oilcakes, leather and leather manufactures, cotton piecegoods, pearls and precious stones, fish and cotton apparel. Other items like iron ore, tobacco, coffee and spices have also shown significant rise. But the offtake of major items like tea and jute manufactures has not been very encouraging. In respect of sugar, exports have been fluctuating widely in keeping with the domestic supply position.

As for imports, the position of country's import value of foodgrains which stood at Rs. 2610 million in 1969-70 dropped continuously in the next three years to Rs. 2130 million in 1970-71, Rs. 1312 million in 1971-72 and Rs. 808 million in 1972-73, but sharply increased to the level of Rs. 4730 million in 1973-74. Another area of imports which presented steep uptrend is related to crude petroleum and petroleum products. The import value of this was only Rs. 1876 million in 1969-70, Rs. 1350 million in 1970-71, Rs. 1040 million in 1971-72, Rs. 2040 million in 1972-73 and Rs. 5600 million in 1973-74. Machinery imports which totalled Rs. 3446 million in 1969-70 slowed down to Rs. 3262 million in 1971-72 but rose every year thereafter - Rs. 3760 million in 1970-71, Rs. 4320 million in 1972-73 and Rs. 5406 million in 1973-74. The import of iron and steel products which was only worth Rs. 865 million in 1969-70 amounted to Rs. 1470 million in 1970-71, Rs. 2376 million in 1971-72, Rs. 2258 million in 1972-73 and Rs. 2426 million in 1973-74. Likewise, the import value of non-ferrous metals also increased from Rs. 745 million to Rs. 1194 million, Rs. 1024 million, Rs. 1090 million and Rs. 1397 million in the respective years. The major item of import among non-ferrous metals is copper. The import bill of manufactured fertilisers which was hardly Rs. 770 million in 1969-70 stepped up to Rs. 1622 million in 1973-74. Also the value of import trade in transport equipment rose from Rs. 512 million in 1969-70 to Rs. 884 million in 1973-74.

The growth of exports during 1973-74, though short of imports, was still significant viewed in the context of various, constraints in production like severe power cuts, shortage of industrial raw materials, such as, steel, coal and aluminium as well as transport bottlenecks. During the year, the major export increase in terms of value was contributed by four items, namely, mill-made cotton textiles, oilcakes, engineering goods and handicrafts. The compound increase from these items amounted to Rs. 3130 million representing nearly three-fifth of the aggregate increase of Rs. 5120 million released from India's overall exports during 1973-74 as compared to the preceding year. In the case of cotton (mill-made), the increase in export was Rs. 1130 million, from Rs. 1569 million in 1972-73 to Rs. 2700 million in 1973-74, in oilcakes by Rs. 958 million from Rs. 748 million to Rs. 1706 million, in engineering goods by Rs. 603 million from Rs. 1410 million to Rs. 2010 million and in handicrafts by Rs. 444 million from Rs. 1197 million to Rs. 1641 million. The export performance was also significant in respect of items like fish, sugar, spices, coffee, iron ore, art silk fabrics, piecegoods and chemicals. The main items showing decline, however, were foodgrains and jute manufactures. The decline in the exports of foodgrains was not very significant since foodgrains is not a sustainable item of exports. The trend in jute manufactures and another major traditional item like tea, is, however, noteworthy. Jute manufactures earned Rs. 2273 million in 1973-74 showing a decline of Rs. 226.8 million compared to the preceding year. The extent of decrease in tea exports during 1973-74 was of the order of Rs. 24.4 million at Rs 1448.5 million. The other major commodities for which the decline was registered in 1973-74 were E.I. tanned hides and skins, cotton yarn, mica, ferro-manganese and ferro alloys.

JAPAN LARGEST BUYER OF INDIAN GOODS

Japan has emerged to be the largest single importing country for India during 1973-74. It purchased Indian goods worth Rs. 3551.20 million in 1973-74 as compared to Rs. 2171.6 million in 1972-73, thus indicating an increase of Rs. 635.30 million. Next to Japan, U.S.A. imported worth Rs. 3427.80 million in 1973-74 as against Rs. 2757.4 million in the preceding year. The next best market was the Soviet Union whose imports from India totalled Rs. 2838 million in 1973-74 as compared to Rs 3048 milllion in the preceding year. The fourth largest importing country in 1973-74 was the U.K. at Rs. 2583.9 million as compared to its previous year's purchases at Rs. 1725.40 million, registering an increase of about Rs. 497.6 million.

On the region-wise basis, Indian exports to both the enlarged ECM as well as ECAFE countries witnessed a remarkable rise while those to East Europe were slightly higher during 1973-74 compared to the preceding year's level. The exports to enlarged ECM at Rs. 5940 million during 1973-74 were higher by Rs. 1870 million or 46 per cent as compared to exports in 1972-73. This increase was mainly due to the new entrant, namely, the U.K. whose offtake in 1973-74 showed an increase of about 50 per cent as compared to the previous year's level. The items which accounted for the increases in exports to the U.K. included mainly the cotton textiles and tobacco.

Exports to the ECAFE region increased by about Rs. 1630 million (or 29 per cent) from a value of Rs. 5680 million during 1972-73 to Rs. 7310 million in the following year. In this region, the Japanese offtake was up by 64 per cent, particularly, in respect of items like marine products, cotton manufactures, oil cakes and iron ore. Also there was a significant increase in the exports to Australia, Malaysia and Singapore although the exports to Bangladesh fell from Rs. 1680 million in 1972-73 to Rs. 587 million in 1973-74.

An appreciable increase in the exports to the North American region was also registered due to the increased offtake by U.S.A. Exports to the U.S.A. increased by about 24 per cent and the items that recorded improvement included mainly cotton textiles, coffee and spices.

Exports to East Europe at Rs. 4780 million were higher by only Rs. 83 million as compared to Rs. 46,937 million in 1972-73. Unlike in the past, exports to

U.S.S.R. declined by Rs. 210 million from Rs. 3050 million during 1972-73 to Rs. 2840 million in the following year. The items which showed a decline mainly included jute manufactures, tobacco and cotton manufactures.

Exports to the continent of Africa remained more or less at the previous year's level. But the offtake of Gulf countries registered improvement; this area absorbed as much as Rs. 1343 million during 1973-74 as compared to Rs. 729 million in 1972-73, thereby indicating a 84 per cent increase.

EXPORT EARNINGS OF DEVELOPING WORLD

GATT REPORT

The export value of developing countries has risen to unprecedented levels in 1973. It is, however, doubted whether they can maintain their base of development in the face of the world's current economic difficulties. This is the substance of the annual report on trade trends for the year 1973-74 published by the Secretariat of the General Agreement on Tariffs and Trade (GATT).

The exports of developing countries in 1973 were 37 per cent higher in terms of dollar value - about 8 per cent higher in volume than in 1973. These figures, however, are provisional and if confirmed, they would be unprecedented, the GATT report stated. As a whole, the developing countries registered a trade surplus of about $ 11,000 million in 1973. Oil exporting countries had a joint surplus of about $ 21,000 million while the others recorded a deficit of nearly $ 10,000 million.

The GATT report predicted that the industrialised countries would have to make adjustments in their foreign investment policy because higher cost of energy would likely result in a relative shortage of capital which in turn would reduce the total amount of capital available for investment in developing countries. The implications of this capital shortage for the developing countries would be serious and "whether the momentum of development which the low income areas attained in the 1960s and the early years of 1970s can be maintained in the face of these problems may indeed be a crucial question facing the world community for the remainder of that decade."

Most of the increased export earning of the developing countries was due to an upsurge in prices of petroleum exports accounting for 40 per cent of the over all rise. But manufactured goods seem to have been responsible for more than half of total volume increased in 1973.

The share of developing countries in total world exports, according to the report, seemed to have increased marginally to 18.1 per cent. There was a sharp rise in the value of imports by developing countries, particularly, in primary products and especially foodstuffs which were up by more than 60 per cent in 1973.

STC'S EXPORT PROGRESS

Exports by the State Trading Corporation of India (STC) are likely to go up by 92 per cent—from Rs. 2728 million in 1973-74 to Rs. 5220 million in the the current financial year. This impressive increase would be made possible, mainly due to sugar exports which alone are expected to earn Rs. 2600 million in foreign exchange. Other major items to be exported by the Corporation include leather-ware, army software, cement, basmati rice, textiles and chemical, such as, naptha and bitumen. Actual Exports by STC during the first six months of 1974-75 (April-August, 1975) have been of the order of Rs. 1940 million. Since shipments in respect of a number of items would gain momentum from October, 1974 onwards, it would be possible to attain the target of Rs. 5250 million. Exports by the STC's subsidiaries, viz., Cashew Corporation of India, Projects and Equipment Corporation and Handloom and Handicrafts Corporation are expected to attain a level of Rs. 5730 million against Rs. 3033 million in the previous year.

Regionwise, STC has been able to make considerable dent in the West Asian markets enabling the country to meet the mounting import bill for crude. Exports to this region are likely to exceed Rs. 1000 million in the current financial year against only Rs. 170 million in 1973-74.

In order to implement its promotional plans, the STC has launched a concerted compaign on export of certain selected products. The object is to concentrate on specific items which on the basis of availability and market prospects deserve an intensive sales compaign. These items which are receiving increased attention include sugar, cement, basmati rice, army software, shoe-uppers, bitumen, paraffin wax and gum resin.

Sugar exports were canalised through STC with effect from April 1974. These exports are mainly of white crystal sugar, though about 1,00,000 tonnes of raw sugar is also exported annually to UK and USA against the quotas allotted by those countries. White sugar is shipped to all destinations except UK, USA, Portugal, Pakistan and South Africa. Sales of sugar, both raw and white, are on the basis of standard Indian specifications only and not on the basis of samples.

KEEN DEMAND FOR INDUSTRIAL FASTENERS IN USA

USA is the largest importer of India-manufactured nuts, screws, nuts-bolts and similar articles of iron and steel and copper. In 1973-74, in the total foreign exchange earnings of this group at Rs. 21 million, U.S.A. contributed as much as Rs. 7.70 million alone accounting for nearly one-third of the total export value.

During the year, USA bought wood screws of iron and steel at Rs. 3.95 million, bolts of iron and steel (with or without nuts) at Rs. 2.30 million, and nuts of iron and steel at Rs. 1.05 million. Besides, it also purchased screws of metal thread, rivets of iron and steel and washers during the year.

Apart from USA, Iran, Singapore, Federal Republic of Germany, UK, Czechoslovakia, Yugoslavia, Lebanon, Zambia and Sudan were the other significant buyers for these items.

EXPORT POSITION OF MILL-MADE COTTON TEXTILES

India's export trade in mill-made cotton textiles witnessed sharp improvement during 1973-74 at Rs. 2700 million, showing an increase of about 72 per cent over the export value in 1972-73. This improvement was mainly owing to a favourable turn in world trade due to cotton textiles becoming more active than synthetic fibres.

The export increase in 1973-74 was both in respect of value and quantity. With the exception of yarn, all the other items of mill-made textiles shared the export increase. The export of piecegoods rose from 449.4 million sq. metres valued at Rs. 844 million during 1972-73 to 645.8 million sq. metres valued at Rs. 1602 million during 1973-74. In other words, the piecegoods exports improved by 43.7 per cent in terms of quantity and nearly 70 per cent in terms of value. The unit value realisation also improved by nearly 32 per cent.

The encouraging export trend witnessed by cotton textiles was due to the emergence of Japan as the major buyer during 1973-74. During this year, purchases by Japan amounted to 46.6 million sq. metres valued at Rs. 115 million as against hardly 2 million sq. metres at a value of Rs. 4.30 million during 1972-73. The offtake by other markets like U.K. and U.S.A. also witnessed substantial rise. Exports to U.K. improved from 106 million sq. metres valued at Rs. 172 million during 1972-73 to 170.7 million sq. metres at a value of Rs. 385 million during 1973-74, and to the U.S.A. from 67 million sq. metres (at Rs. 124 million) to 99.7 million sq. metres. (Rs. 292 million). However, there was a sizeable fall in the offtake by U.S.S.R. from 130.5 million sq. metres (Rs. 285 million) in 1972-73 to 54 million sq. metres (Rs. 146 million) in 1973-74.

Besides cotton piecegoods, cotton apparel also witnessed a remarkable rise from a value of about Rs. 300 million during 1972-73 to Rs. 637 million in the year that followed. Overseas demand was particularly promising from the U.S.A. and the markets of enlarged ECM, particularly U.K. and Denmark.

REVIEW OF INDO-EGYPTIAN TRADE

According to the information available from the Indian Embassy, Cairo, Indian exports to the Arab Republic of Egypt amounted to over Rs. 200 million during 1973. In the same year, India's import trade from that country totalled Rs. 250.72 million.

The principal items of export from India to ARE were tea and jute manufactures at a value of Rs. 75 million and Rs. 69.0 million respectively. Next in importance was the export of cotton rayon of counts 12-24 (Rs. 5.5 million), shellac (Rs. 4.6 million), machinery other than electric (Rs. 4.4 million), transport equipment (Rs. 4 million), spices (Rs. 2.75 million), tobacco (Rs. 2.63 million), non-metallic mineral manufactures (Rs. 2 million) and coffee (Rs. 11.13 million). India also exported sizeable quantities of diesel engines, electric fans, electric fluorescent tubes and fittings, bicycle components and accessories, cast iron pipes, electric motors, textile mill and components, air-compressors, machine tools, handtools, chemical items including aluminium sulphate, drugs and pharmaceuticals, cigarette paper and other products including books and publications, steel bars, rods and structurals, crude animal and vegetable materials, electrical machinery, metal manufactures and so on.

The principal item of import from Arab Republic of Egypt into India has been cotton. This import bill was valued at Rs. 250 million in 1973. India also imported plastic materials, drugs and medicines, transport equipment and non-metallic mineral manufactures during the year.

DRIED TAMARIND EARNS MORE

Indian tamarind has created a special taste for the overseas consumers. Its foreign exchange earning during 1973-74 amounted to nearly Rs. 3.50 million which was higher than its earnings in 1972-73 at Rs. 1.90 million and Rs. 2.50 million in the year before. In fact, in the total exports of dried fruits at nearly Rs. 5 million during 1973-74, tamarind (dried) alone accounted for the bulk at Rs. 3.20 million. Additionally, fresh tamarind secured nearly Rs. 0.20 million.

Over 40 countries import Indian tamarind every year. During 1973-74, Saudi Arabia constituted the leading buyer at Rs. 0.55 million, followed by Syria at Rs. 0.37 million, USA at Rs. 0.30 million, Japan Rs. 0.24 million, Bahrein Islands and the U.K. Rs. 0.22 million each and South Yemen People's Republic Rs. 0.15 million. Duriug 1972-73, Afghanistan was the principal importer having bought worth Rs 0.28 million. Among other buyers, U.K., Syria and Bahrein Islands were prominent. Besides tamarind (dried), India's export range in dried fruits covers mango slices (dried), resins, apricots, dates, other torpical fruits and many other dried fruits.

PROCESSED FOOD EXPORTS TO U.A.E.

The Processed Foods Export Promotion Council, New Delhi, has recently secured orders for supply of fruit products and meat to the United Arab Emirates. The orders included a deal to supply mango products worth £ 15,800 as also 200 cartons of mango juice valued at £ 500. Also two chartered flights of fresh meat totalling 16,500 kg. valued at about £ 15,800 were arranged to reach United Arab Emirates recently. The Processed Foods Council is also pursuing its efforts to promote the development of fresh fruits and vegetables to this and other contiguous markets.

Total exports from India to the United Arab Emirates during 1973-74 amounted to Rs. 246 million against only Rs. 92 million in the preceding year. The tempo of exports during 1974-75 appears to be still higher. Exports in the first two months-April-May, 1974 - totalled Rs. 38 million, thrice the level in April-May 1973.

INTERNATIONAL ECONOMIC COOPERATION

INDO-US JOINT COMMISSION

During his recent visit to India, the U.S. Secretary of State, Dr. Henry A. Kissinger discussed several aspects of Indo-U.S. Cooperation. At the end of his visit, a joint-communique was issued touching on various problems of mutual interest. The Joint-Communique stated that both U.S.A. and India agreed to set up an Indo-U.S. Joint-Commission, the signing of which (on October 28) marked a significant step forward in building up a framework for more mature and meaningful relations and active cooperation. Both the sides expressed confidence that the Joint Commission has facilitated contacts and exchanges in the field of trade and commerce, economic cooperation, science and technology, education, culture and other fields. The first meeting of the Joint Commission was held in New Delhi on October 28, 1974 and the next meeting is scheduled to be held in Washington in early 1975.

There will be three sub-commissions to the Indo-U.S. Joint Commission to deal with the economic and commercial matters, science and technology and education and cultural activities. The tasks of the Commissions in the field of economic and commercial cooperation will be to review matters concerning economic and commercial relations between the two countries; to identify and investigate areas for closer cooperation; to make joint studies in areas of common interest and to recommend programmes concerning economic growth and development through mutual cooperation; to recommend measures and activities to stimulate two-way trade between the two countries consistent with their international obligations which may include inter alia the sending of trade promotion missions and trade delegations; to promote possibilities of increased investment consistent with the investment policies of the two countries and to explore possibilities of enhanced cooperation between financial, industrial and commercial institutions and organizations.

In reviewing the current international economic situation and the rising prices of food, fertilisers, fuel, industrial materials and technology, both sides agreed that cooperative efforts were called for to prevent further deterioration of the world economic structure to the detriment of both the developed and developing nations. It was mentioned in the Joint Communique that they noted the serious situation developing in the most seriously affected countries as a result of the rising prices and the paucity of resources now available to them. It was hoped that the forthcoming Food Conference in Rome would find a way of conserving world food stocks and making these available to the most seriously affected developing nations on more favourable terms. It was also agreed to exchange views and technology on a bi-lateral and multi-lateral basis in order to achieve an increase in national food production and ensure the necessary inputs of energy, fertilisers and technology. On the question of nuclear proliferation, the Indian side reiterated its consistent position that the highest priority in international efforts should be accorded to nuclear disarmament. It was also affirmed not to develop nuclear weapons and to use nuclear technology for peaceful purposes only. The U.S. side, the joint-communique stated, welcomed the Government of India's affirmation in this regard.

The Joint-Communique also expressed the satisfaction of both India and U.S.A. at the improvement that has taken place in their bi-lateral relations and agreed that based on their democratic traditions, structure of government and best relationship, there would be considerable scope for further strengthening of bilateral relations, which are mainly based on the principles of equality, mutual respect and mutul understanding.

INDO-IRANIAN COLLABORATION

In pursuance of the recommendations of the Indo-Iran Joint Commission for Economic, Trade and Technical Cooperation, bilateral discussions were held in Tehran recently for the conclusion of a new long-term Agreement. The Agreement is valid for five years and provides for the 'Most Favoured Nation' treatment. Also letters were exchanged to provide for long-term arrangement to be made from time to time between the agencies to be appointed by the respective Governments to encourage greater flow of goods, import from Iran of fresh fruits, dates, asafoetida and medicinal herbs as also export from India of refined sugar of 500,000 tonnes during october 1974 to 1977, 100,000 tonnes of cement during January 1975 to March 1977 and 130,000 tonnes of rails during 1975 and 1976.

A new shipping company is to be set up shortly in Iran jointly by the Shipping Corporotion of India (SCI) and the Arya Shipping Line, Tehran (Iran). Called the 'Irano-Hind Shipping Company, this new shipping venture is to have share contribution in the ratio of 51:49 per cent of Iran and India respectively. Both the countries would have equal representation on the Board of the Directors of the proposed company to be registered in Iran. Iran is to provide loans for purchase of ships while India is to supply technical know-how for the venture.

The Indian firm M/s. Shipping Corporation of India is one of thesignificant shipping companies in the public sector in India. During 1973-74, it earned a record net profit of Rs. 139 million as against only Rs. 80.80 million in the preceding year. The Company has a large fleet of 95 ships of 1.87 million DWT (as in March 1973) which expanded to this level from 78 ships of 1.38 million DWT (as in March 1972). The Corporation's expanded fleet today is comprised of bulk carriers for ore, oil and grain carriers and large size tankers and cargo liners. By the end of March 1973, it had 41 ships on order aggregating 1.69 million tonnes of DWT. These orders comprise dry cargo vessel, passenger cum cargo vessels, super tankers, product carriers, container oriented vessels, bulk carriers, coal carriers and so on. It is expected that by the end of 1976, the company's tonnage would reach 4.59 million DWT mark.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

CREDIT POLICY FOR 1974-75

The Reserve Bank of India has recently announced the credit policy for 1974-75 busy season of the Indian economy, commencing November 1974. The slant of the policy is on monetary restraint as there has been no marked evidence of an abatement of inflation. However, the Bank announced that its statutory cash reserve ratio would stand reduced from 5 per cent of their demand and time liabilities to 4 per cent. As a result of this reduction, about Rs. 1200 million of deposits impounded by the Reserve Bank earlier are expected to be released by this year end. Also commercial banks are permitted to borrow at the bank rate an amount equal to 1 per cent of their demand and time liabilities. This step would enable the banking system to tap Rs. 1200 million worth of re-finance from the Reserve Bank of India.

In a letter to Banks, the Governor of the Reserve Bank of India stated that "keeping in view the need for overall monetary restraint, the larger amount of credit should be considered as adequate for meeting the essential needs of production in both the public and private sectors. The trend in banking in recent months has been broadly in line with the provision of slackening down the monetary expansion. The Governor stated that during the slack season of 1974, credit resources increased by only 2.8 per cent while money supply declined by 0.9 per cent as against increase respectively by 6.4 per cent and 3.2 per cent in the same period of last year.

While these developments are encouraging, there is no scope yet for any relaxation in monetary restraint as there is still no marked evidence of an abatement in inflation. In announcing fiscal and other economic policies, it would, therefore, have to keep its major objective as combating of inflationary pressures.

The Researve Bank of India's communication further mentioned that in the present economic setting, banks should plan credit allocation bearing in mind the need for increasing agricultural production and building up of an adequate public distribution system for food; the continued necessity of playing maximum attention to agricultural credit requirements including those for distribution of agricultural inputs; the paramount objective of improving export earnings, the need for prior consideration to meet the working capital requirements of manufacturing units for expanding production in the public sector; preference to be accorded to units in the core sector and the private sector (mainly those producing fertilisers, pesticides and other needs of agriculture ,transport and electrical equipment and basic metals and minerals; and regulating advances to the private sector against sensitive commodities, such as, foodgrains, cotton, oilseeds and oil, sugar and textiles).

On the question of export promotion, the credit policy states that the special requirements of export credit should continue to be accorded a high priority. The policy of applying concessionary rate of interest on export credit to periods not exceeding 90 days except in regard to post-shipment credit arising out of exports to Western hemisphere will continue, the objective behind this measure being to bring about a faster turn round of funds. The intention of the policy is that the credit would be made available even beyond this period of 90 days or 120 days as the case may be, to meet the legitimate needs of exports, in particular difficult situation, such as, unavoidable dealys in obtaining essential inputs and shipping bottlenecks. In such exceptional cases, banks are required to charge their normal lending rates in the extended period.

In sum, the Reserve Bank of India has announced a policy of controlled credit expansion during the next busy months, with preferential treatment being assured to priority industries the progress of which is essential for the resurgence of Indian economy.

OIL PRODUCTION IN ASSAM REGION TO GO UP

India's import bill on account of crude is expected to come down by about Rs. 2000 million. The foreign exchange saving to this extent is envisaged by raising oil production in the Assam region by M/s. Oil and Natural Gas Commission(ONGC) from the present 0.6 million tonnes to 1.4 million tonnes together with an expected oil production of about a million tonnes from the Bombay High.

Happily, the oil yield estimates from the Assam fields of ONGC are higher than those estimated by the Russian experts. Foreign collaboration may be considered for exploration of oil in off-shore areas off the coast of Kerala, Tamil Nadu and Bay of Bengal, apart from Bombay High and Saurashtra segment, presently under exploration. To achieve this objective, India may borrow or hire equipment or even give drilling contracts in these areas.

The chances of getting oil from Tripura are bright as a structure in this region-45 killometres long and 12 kilometres broad has been found to contain gas. Similarly oil has been struck in Kashmir but the exact reserve is to be determind by further drilling. There are also active plans to explore oil on a large scale in the Gangetic belt from Punjab to West Bengal.

India's domestic production of crude during 1973 was of the order of 7.20 million tonnes while imports of crude and products were at 13.39 million tonnes. The domestic production hardly accounts for about one third of the country's total requirements. ONGC and M/s. Oil India, Limited(OIL) are the public sector and Joint sector units respectively engaged in oil exploration in India. Of the total domestic crude production, M/s. ONGC accounts for about 4 million tonnes while the share of M/s. OIL is of the order of about 3 million tonnes. Both these firms have so far discovered about 175 million tonnes of recoverable oil reserves and achieved cumulative production of about 60 million tonnes. The balance of 115 million tonnes is yet to be recovered.

By the end of the Fifth Plan (1974-79) ONGC estimates to step up its production from the present 4 million tonnes to 8.42 million tonnes. Thus, the total production of both these units viz ONGC and OIL is to go up to a level of 11.42 million per annum. Apart from this, during the plan period nearly 70 million tonnes of additional recoverable reserves would be located.

FOOD PRODUCTION IN 1973-74

India's total production of foodgrains during 1973-74 totalled over 103.60 million tonnes (estimated) registering an increase of 6.8 per cent over the production during 1972-73 at little over 97 million tonnes, according the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India.

During the year under review, total area under various crops increased by 5.7 percent to 126.13 million hectares from 119.28 million hectares in the year before. Of the total output during 1973-74, kharif food grains accounted for 66,72 million tonnes as against 58.64 million tonnes in 1972-73 while the share of rabi foodgrains was of the order of 36.89 million tonnes as compared to 38.38 million tonnes. Thus, kharif foodgrains registered an improvement by nearly 14 percent while rabi foodgrains declined by about 4 percent. The total production of cereals registered 7.7 percent increase to 93.86 million tonnes from 87.12 million tonnes.

Among cereals, the cropwise output during 1973-74 indicates that rice registered an improvement by 11.5 percent over the production in 1972-73—43.74 million tonnes against 39.25 million tonnes. Jowar production also went up by 29 percent to nearly 9 million tonnes from the preceding year's level of 6.97 million tonnes. The wheat output, however, declined to 22 million tonnes from 24.74 million tonnes by about 10.8 percent.

Among other crops, bajra production increased sizeably (by over 80 percent) to 7 million tonnes (1973-74) from 3.93 million tonnes (1972-73), ragi to 2.13 million tonnes from 1.92 million tonnes (10.8 percent), and small millets to 1.86 million tonnes from 1.55 million tonnes (20 percent).

Maize, pulses, tur and gram are the specific crops the production of which declined during 1973-74. The output of maize reduced to 5.6 million tonnes from 6.4 million tonnes, pulses to 9.7 million tonnes from 9.9 million tonnes, gram to 4 million tonnes from 4.5 million tonnes and tur to 1.4 million tonnes from 1.9 million tonnes.

Bulk of the increase in production of rice has been recorded by Andhra Pradesh, Maharashtra, Uttar Pradesh, Orissa, Madhya Pradesh, Gujarat, Karnataka, Punjab and Tripura and is attributed partly to favourable weather conditions and partly to measures taken under the intensive kharif production programme. Bihar and Assam are the states whose production of rice declined considerably.

Wheat production registered decline owing to spell of severe cold in the second half of December 1973 and the first week of February 1974, failure of winter rains in several rabi growing areas and overall shortage of fertilisers. This decline in production was mainly shared by Uttar Pradesh and Bihar and to a lesser extent by Haryana, Assam and Punjab. Happily, this decline was offset, to some extent, by increases reported by Gujarat, Madhya Pradesh and Maharashtra and is attributed partly to increase in area and partly to higher yield rates during the year as compared to those in 1972-73.

MOTOR STARTERS
A REVIEW

India has achieved a major break-through in the manufacture of motor starters. It is an area of sizeable production which has enabled the country to achieve near self-sufficiency. There are 11 units manufacturing motor starters with a licensed capacity of 524,724 numbers. The installed capacity is 385,514 numbers. Production during 1972 was of the order of 429,000 numbers. There are no letters of intent under implementation. The indigenous range covers all varieties viz. DOL, Star Delta, Auto transformers and Stator Rotors.

Imports of motor starters have been marginal; during 1971-72; these were limited to Rs. 0.65 million while exports during the same year were of the order of Rs. 1.27 million.

Precise estimates of demand for motor starters during the Fifth Plan have not been made. Having regard to the growth of power generation and distribution, there appears to be a scope for creation of further capacity.

RISE IN SILK PRODUCTION LIKELY

Silk production in India is expected to go up by fifty percent by the terminal year of the Fifth Five Year Plan (1978-79), according to the Silk Board of India.

Currently, silk production in the country is of the order of 3,000 tonnes. It is likely to attain a level of 4645 tonnes by 1978-79.

An outlay of Rs. 350 million—Rs. 270 million under state plans and Rs. 80 million under the central plan—has been provided for sericulture development during the Fifth Plan. At present, the industry provides full time employment to about 3.2 million people. The Fifth Plan schemes envisage job opportunities for an additional 0.5 million people.

India ranks fifth in silk production in the world and is credited with production of all the four known varieties of commercial silk—mulberry, tasar, muga and eri.

Alongwith with appreciable production, foreign exchange earning of the silk industry in India has also witnesses an uptrend in recent years. Exports of silk fabrics which totalled only Rs. 3.4 million in 1958 rose to over Rs. 120 million in 1973-74, registering nearly a four-fold increase. Besides, Rs. 25 million worth of silk waste and silk yarn were also supplied abroad. The Fifth Plan export target has been placed at Rs. 875 million.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

CYCLONE WARNING RADAR

With the completion of successful manufacture of sophisticated type of cyclone warning radar by M/s. Bharat Electronics Limited (BEL), Bangalore, Karnataka, India took a step forward in radar production. The radar can detect cyclones and has a range of 500 kilometres. After calibration, it can also measure rain fall within a radius of 100 kilometres.

Of the four S Band radars ordered by the India Meteorological Department, the first one is ready for despatch to Bombay. Entirely designed and developed by the engineers of BEL, the radar incorporates the latest digital servo techniques for antenna controls, third generation solid state display and built-in performance monitoring and fault detection facilities for maximum reliability and minimum maintenance. It is stated to be one of the most advanced systems in the world.

These radars when installed along Indian coastline will be in a position to give advance warning of the movement of cyclones, thereby keeping people aware of advancing disaster.

BEL has to its credit the development and manufacture of X band radar, the equipment for storm warning. These have been installed at four airports in India viz. Safdarjung (Delhi), Begumpet (Hyderabad), Dum Dum (Calcutta) and Santacruz (Bombay). These radars are primarily useful for warning pilots about stormy regions and heavy precipitation areas. These radars have a range of 400 kilometres and a power output of 200 kw.

ELECTRICS FOR TUBE DRAWING MILL

The Bharat Heavy Electricals Limited (BHEL), Bhopal, has successfully completed the design, manufacture and commissioning of Electrics for a sophisticated Type H_{64} T Horizontal Tube Drawing Mill. These are to be supplied to M/s. Kamani Tubes Pvt. Ltd., Bombay. These drawing machines are used for drawing copper and other non-ferrous tubes. The electrics comprise one-89.5 kW (120 HP), 0/460/460/460V, 4/400/1200 r.p,m., DC motor, one-115 kW transductor controlled silicon rectifier unit and a suite of control cubicles for main DC drive motor and AC aux. motors.

The DC motor is designed to cater for the high starting and braking loads with variable speed. At lower speeds of tube drawing, the motor is capable of delivering variable HP, and constant torque (upto the base speed of the motor). At higher speeds above base speed, the motor operates with maximum horse power and variable torque.

The diode rectifier equipment, housed in a sheet steel cubicle, comprises a three phase auto self-saturating transductor fed from 400/440 Volts, 3 phase, 50 c/s, A.C. suyply, the output (460 Volts DC variable) being rectified by semi-conductor diode rectifier. The DC output voltage can be varied by changing the control signal to the transductor unit, as per the speed requirements by the operator. A static current limiting circuit is provided to prevent the transductor/rectifier unit from over load current.

The DC control equipment provided caters for different modes of operation called for by the tube drawing machine. All the AC auxiliary motors pertaining to ventilation, lubrication, etc. are to be started first and then the operator will be able start the main DC motor.

The control equipment for main DC motor is suitable to meet varying sophisticated operational requirements for different modes of operations, including a number of automatic features.

One of the main and important operations in the tube drawing process after drawing a tube coil, is the block positioning, preparing the tube block ready for the next operation. The block positioning feature is achieved either by automatic or by manual control modes.

SYNTHETIC RUTILE FROM ILMENITE

Rutile whose main ingredient is titanium dioxide is the most sought after raw material in the pigment and titanium alloy industries. Since natural rutile is scarce in India the Regional Research Laboratory (RRL), Bhubaneswar, undertook detailed study on preparation of synthetic rutile from ilmenite, which is found in abundance in Kerala, Tamil Nadu and Orissa.

The laboratory carried out experiments in a specially designed column reactor and succeeded in developing a new process for production of synthetic rutile from Indian ilmenite.

The process developed by the laboratory involves a very simple column reactor where the gravitational flow of the acid is used. This process has special features, such as, one single step in leaching where filtration, washing and drying are carried out in the same unit. The flow of acid and separation of leach liquor from solids are continuous and simultaneous. The liquor obtained from the process has been successfully electrolysed to prepare iron powder of 97 per cent purity. Chlorine is obtained as a by–product.

PROCESS FOR REUSING CURING SALT

A method of purification of used curing salts by making them into a saturated brine solution, filtering through a sand column and then evaporating (by solar radiation) of the filtrate has been developed at the Central Leather Research Institute, Madras. This method gives fine crystals of salt free from organic nitrogen. The salt can be reused with 25 per cent sodium bichlorophenate.

Uralkyd finishes based on isocyanate and drying oil, which can be applied to leather as glossy top coat, have been prepared. The film of the product, however, has less flexural endurance as compared to normal two-pot polyurethane finish. The product can be used for making imitation patent leather.

INDIA'S EXPORTS OF PRINCIPAL ITEMS

(Value in Rs. million)

Commodities	Unit of Qty.	1969-70		1970-71		1971-72		1972-73		1973-74	
		Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Valued	Qty.	Value
Tea	Million kgs.	174.1	1245.0	199.1	1482.50	207.4	1563.10	193.2	1472.90	190.3	1448.50
Coffee	000 Tonnes	32.4	196.20	32.2	251.10	35.7	220.70	50.9	329.30	52.7	460.10
Tobacco Unmanufactured	,,	54.3	327.10	47.5	314.00	57.3	422.50	94.5	610.70	78.2	684.10
Oilcakes	,,	704.9	414.70	878.5	554.20	741.7	401.50	1001.3	747.70	1224.5	1706.00
Cashew Kernel	,,	60.6	574.10	50.3	570.60	60.4	613.30	66.3	688.20	52.3	744.30
Spices	,,	41.6	344.90	46.9	388.10	64.7	361.80	44.4	291.30	61.1	549.00
Fish	,,	29.5	308.30	32.6	305.30	38.7	413.90	34.7	544.50	46.9	883.50
Sugar	,,	82.3	85 60	348.1	273.70	316.7	302.00	101 8	123.70	248 9	422.20
Cotton raw	,,	36.0	146.90	32.1	139.50	31.7	163.20	38.0	215.80	54.9	324.00
Iron ore	Mil. Tonnes	16.5	946.20	21.2	1172.80	19.9	1047.00	20.6	1097.90	23.7	1328.30
Cotton piecegoods-millmade	Mil. sq. Metres	406.2	624.40	414.5	675.00	382.0	666.30	449.4	843.70	645.8	1601.50
Cotton piecegoods-handloom	Mil. Metres	26.9	72.50	27.9	77.90	28.7	99.50	47.1	165.40	67.6	320.60
Cotton apparel	Value	—	54.80	—	86.20	—	139.90	—	298.50	—	637.40
Jute manufactures	Mil. Tonnes	0.6	2066.50	0.6	1904.40	0.7	2652.80	0.6	2499.60	0.6	2272.80
Fabrics of artsilk and synthetic fibre and spunglass-millmade	Mil. metres	15.0	35.70	19 6	52.30	24.9	74.40	24.7	94.80	76.5	278.20
Leather and leather manufactures excl. footwear	Value	—	815 40	—	721.80	—	907.70	—	1745.10	—	1713.50
a) E. I. tanned hides and skins	Mil. kgs.	19.6	497.60	19.6	447.50	25.7	642.70	30.3	1011.00	18.2	856.00
b) Chrome tanned	,,	13.2	272.00	13.8	245.00	14.4	217.70	28.7	520.40	19.1	623.80
c) Finished leather	,,	0.8	21.30	0.7	15.40	1.7	35.60	13.9	165.60	4.5	163.50
Engineering goods	Value	—	1025 00	—	1304.10	—	1223.00	—	1409.80	—	2012.90
Chemicals and allied products	,,	—	221 90	—	293.60	—	304.00	—	352.60	—	493.10
Pearls, precious and semi-precious stones	,,	—	438 80	—	418.80	—	515.00	—	779.30	—	1067.10
TOTAL OF EXPORT INCL. RE—EXPORTS	,,	—	**14132.80**	—	**15351.60**	—	**16082.20**	—	**19708.30**	—	**24832.20**

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INDO-WEST GERMAN TRADE

Federal Republic of Germany is, next to U.K., the most important European trading partner of India. But Indian exports to this market form only negligible proportion (0.25 percent) of West German global imports and West German exports to India form about 6.8 percent of India's global imports.

	Value in Rs. million		
	1971-72	1972-73	1973-74
Exports	371.00	622.80	318.30
Imports	1270.30	1602.20	195.80
Balance of trade	(-) 899.30	(-) 984.40	(-) 114.00

The trade balance has been persistently and increasingly adverse to India. The value of trade deficit which registered a downward trend till 1969-70 has been increasing largely due to the steep increase in imports. Such a position is not conducive to the expansion of trade of a developing country which has to look for a substantial foreign exchange surplus to meet debt repayment obligations and the import needs for development purposes.

The commodity structure of Indo-West German trade is also narrow. Nearly 53 percent of Indian exports are accounted for by six main traditional items, namely, leather, floor coverings, tea, precious and semi-precious stones, footwear and crude vegetable materials. Exports of leather and floor coverings did record a significant increase of 160 percent and 116 percent respectively during the period 1971-72 over 1970-71.

Nearly one-third of Indian goods reach the West German market through third countries. In 1972, for instance, the total value of West German imports of goods of Indian origin was estimated at over DM 285 million but the value of direct imports from India was only of the order of DM 207 million. Thus, the value of import of Indian goods through third countries was nearly DM 80 million. In other words, Indian exports to the West German market are not fully realised in terms of foreign exchange earning for India.

The main items which find their way from India to West Germany through third countries are primary products and raw materials, notably, tea, coffee, tobacco, furs, iron ore, industrial raw materials and jute. Main imports from West Germany consisted of machinery other than electric, electrical apparatus and appliances, organic chemicals, madicinal and pharmaceutical products and fertilisers. The average imports into India during the first Five Year Plan, the Second Plan and the Third Plan periods were Rs. 580 million, Rs. 1827 million and Rs. 1758 million respectively.

There has been a substantial progress in terms of Indo-West German industrial collaboration. Several lines of sophisticated production have come up in the Indian economy with German assistance. Further avenues of collaboration could be explored keeping in view the advantage of natural factors in existence in India, such as, comparative low costs and skilled labour, availability of raw materials and a vast home market. The Government of India's foreign collaboration policy is well defined and the German investor is aware of the potentialities of the Indian market.

There have been proposals to enter into arrangements with West German Government for the promotion of textile items, particularly, cottons and woollens. The main features of the arrangements relate to German technical assistance to advise the Indian units in the manufacture of these items and to assist in marketing them in the West German market. Leather products sector offers another example of export potential to West Germany. Similarly, hand-knitted carpets present excellent scope in that market. These are only examples; the basic point is to let the German buyer realise the emerging scope of exporting a variety of its products so that through mutual collaboration, the products could be manufactured and marketed in a better suited manner for the West German market. □

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WIRE ROPES TO TURKEY

An export order valued at about $ 32,000 for supply of special type of wire ropes to Turkey has been recently bagged by M/s. Usha Martin Black (Wire Ropes), 14 Princep Street, Calcutta in the face of competition from sophisticated markets.

Quantitatively, the order provides for supply of a consignment of 35 tonnes, having two 10 - tonne reels and two 7.30 reels. It is intended to meet immediate requirements of the coal mining industry in Turkey; the importing country has itself arranged to fly two C-130 aircrafts of the Turkish Air Force to lift the Cargo from Calcutta.

Total exports of the Calcutta firm amounted to Rs. 11.10 million in 1973 against Rs. 6.56 million in the preceding year. These are expected to reach a level of Rs. 50 million in the current year. The firm's products are sought for by about 40 countries including USA, Canada, USSR and UK.

The production range of the firm includes steel wire ropes and auto cables of all types. Presently, they are reported to be implementing an expansion programme to produce 9,000 tonnes of additional quantity of specialised wires which could be used in the manufacture of ball bearings, fasteners and detonators. The firm is also planning to develop stainless steel wires. In fact, it has already set up a project division for making feasibility analysis for various wire products which can be manufactured out of the wires proposed to be produced in the expansion plan. Further, it is also putting up a wire drawing Machine plant at Bangalore. This plant is expected to go on production steam around first half of 1975.

India's total exports of wire ropes, cables and similar articles (not insulated) amounted to Rs. 25.60 million in 1973-74 against Rs. 16 94 million in the preceding year. Of the total export earning of the industry in 1973-74, the share of black wire ropes made of iron or steel was Rs. 10.52 million (2793 tonnes) while galvanised wire ropes fetched Rs. 13.75 million (3475 tonnes). The contribution of other varieties in the group was not significant.

During the year, USA was the leading importer for Indian black wire ropes. Its purchases were valued at as much as Rs. 2.47 million, followed by those of Singapore at Rs. 2 million. USSR, Malaysia, Hong Kong, Bangladesh, Thailand and Yugoslavia were among other prominent destinations. For galvanised wire ropes, USSR with an intake worth Rs. 6 million topped the list of buying countries, followed by USA at nearly Rs. 3.70 million. Among other customers, Hong Kong, Yugoslavia, Singapore, Kuwait and Korea Republic were significant in order of the value of their intake.

Wire rope industry is listed among priority industries in India. Total installed capacity likely to have materialised by 1973-74 is placed at 45060 tonnes. Actual production was of the order of 20,000 tonnes in 1972. Indigenous production of wire ropes is used in mines upto depth of 350 metres. Of the two major raw materials required by the industry, namely, high carbon rods and zinc, 60 percent and 30 per cent of of the total requirements are respectively available from indigenous sources.

EXPORT SUCCESS OF AN ELECTRONIC UNIT

Stepping up their exports to a level of Rs. 18.60 million during 1973-74 from Rs. 10.60 million a year before, M/s. Bharat Electronics Limited, (BEL), Bangalore, have amply testified the successful endeavour of the Indian Electronics Industry in the export field. A recent order bagged by them at a value of Rs. 170 million from Switzerland for the supply of sophisticated radars, indeed indicates the advancement of the Indian Electronics Industry. Improving their production turnover by 11.5 per cent during 1973-74 over that of the preceding year, BEL turned out a variety of electronic equipment at a value of Rs. 450 million as compared to Rs. 390 million last year.

BEL's second unit at Ghaziabad in Uttar Pradesh which went on production stream only recently, achieved a production of Rs. 20 million. Within this short period, it secured an order from M/s. India Oil Corporation for a Communication system for Haldia—Barauni—Kanpur pipeline as also another order at Rs. 10 million from Tamil Nadu Police for providing them with modern, reliable microwave communication system.

At present, indigenous design and development in respect of a number of items, such as. communication equipment for Defence, Police, Posts and Telegraphs, Television and Broadcast equipment for All India Radio, mobile and surveillance radars, microwave communication equipment, visual display systems, and peripherals for computers are under various stages of progress.

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During 1973-74. India's electronic industry secured foreign exchange worth Rs. 75 million, registering nearly 25 per cent increse over its export performance in the preceding year. During the year, the total output of the industry was of the order of Rs. 2420 million while in the preceding two years, it was Rs. 2060 million (1972-73) and Rs. 1800 million (1971-72). To India's export trade in electronics in a promote manner, Indian Government has set up an Electronics systematic Processing Zone at Santa Cruz, near Bombay.

TEXTILE MACHINERY IN EXPORT TRADE

Of a variety of industrial machines exported by India, Textile machinery has carved out a significant place for itself. The exports of the machinery and parts improved to Rs. 46.81 million in 1973-74 from Rs. 43.35 million in the preceding year. The export destinations included even sophisticated countries like Sweden, Switzerland, German Federal Republic, U.K. and Netherlands.

Contributing to the export effort in the line, M/s. Textile Machinery Corporation Ltd. (Texmaco), Belgharia, 24 Parganas (West Bengal), have recently received a sizeable order from South Korea for supply of textile machinery to that country. The order valued at Rs. 16 million was placed with Texmaco after a Korean delegation had visited the firm's Works in Belgharia.

The firm has two main divisions, the Textile Division and the Boiler and Heavy Engineering Division. The former produces ring spinning frames drawing frames, carding engines and spare part, such as, spindles, rings, fluted rollers and tin rollers. The other Division manufactures industrial and locomotive boilers, railway rolling stock, tram cars, pressure vessel sluice-gates and penstocks, cranes, sugar machinery plants and other mechanical handling plants.

India's annual installed capacity for textile machinery is estimated at Rs. 500 million exclusive of capacity for spares and components. Letters of intent for an additional capacity of Rs. 321 million have been issued. Actual production of complete machinery improved in 1973 (upto November) to Rs. 318 million from Rs. 306 million in 1972.

The industry is presently manufacturing the entire range of spinning, weaving, and processing machinery of high quality. The main raw materials required include pig iron, coke and steel which are available indigenously. Imported raw materials are limited to about 5 percent of the requirements.

MEDICINAL AND PHARMACEUTICAL EXPORTS UP

India's export of medicinal and pharmaceutical products has witnessed consistent uptrend in recent years. The export value attained a level of nearly Rs. 150 million in 1973-74, compared to Rs. 103 million in 1972-73, Rs. 87 million in 1971-72, Rs. 84.6 million in 1970-71, and only Rs. 60 million in 1969-70.

Medicaments, alkaloids, anti-biotics, vitamins and vaccines are the principal categories of Indian pharmaceutical products sought in growing quantity by a number of markets including even advanced countries like USA, USSR, UK and Federal Republic of Germany. Nepal, Bangladesh, Sri Lank, Poland, Switzerland, Hungary, Iraq and Australia are also prominent among importers of these products from India.

In tune with the uptrend in these exports, M/s. Ranbaxy Laboratories Ltd. (Okhla, New Delhi) were able to improve their exports. though limited, to about Rs. 0.50 million from nearly Rs. 0.30 million in the preceding year. Their performance is likely to improve further during the current year. The total sales turnover of the firm has also improved to Rs. 31.10 million in 1973 from Rs. 23.10 million in 1972. The same uptrend in sales is marked in the current year as well.

The firm is engaged in the manufacture and processing of antibiotics, chemotherapeutics, corlicosteroids, tranquillisers, hematinics, anti-diabetics, analgesics and antipyretics as also other pharmaceutical specialities.

In India, there are 114 units in the organised sector and about 2000 units in the small scale sector engaged in the manufacture of drugs. Actual production in 1973 in respect of major broad categories in this sector was more than that of the preceeding year. In 1973, the installed capacity and actual production of these categories was : antibiotics 750 tonnes and tonnes; anti-tubercular drugs 1099 tonnes and 700 tonnes; oral anti-diabetics 110 tonnes and 100 tonnes; insulin 1500 M.U. and 650 M.U.; analgesics and antipyretics 1836 tonnes and 1500 tonnes; anaesthetics 662 tonnes and 250 tonnes; anti-malarials (Synthetics) 61.6 tonnes and 80 tonnes; anti-dysentery drugs 441 tonnes and 150 tonnes; hormones 3148 Kg. and 2000 Kg.; vitamins 496 tonnes and 400 tonnes; sulpha drugs and intermediates 1700 tonnes sand 1600 tonnes.

The overall utilisation of the installed capacity was around 75 percent in 1973. Overall production of the industry is envisaged at Rs. 5000 million by the end of 1978-79.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT REVIEW OF SPICES

India has established a record in spices exports during 1973-74. Exports in the year were to the tune of 61.214 tonnes valued at Rs. 548.70 million against 45.289 tonnes valued at Rs. 290.50 million in 1972-73. The increase in terms of quantity exported during 1973-74 over 1972-73 was 35.2 per cent. But as a result of higher unit price realisation in respect of almost all spices, the increase in terms of earnings was about 89 per cent. The export earnings during 1973-74 from spices was higher by Rs. 160.50 million than the previous record of Rs. 388.20 million in 1970-71. Another interesting point is that almost all items have contributed to the increase in earning during 1973-74.

Pepper was the most important spice exported from India during 1973-74 also, accounting for about 54 per cent of the total earnings from spices. The share of pepper in the last year was 49 per cent. Cardamom ranked as the second important item during this year also though its share declined to 21 per cent from 24 per cent in 1972-73. Chillies which used to be the third important spice in the past has practically lost its importance as ginger yielded its third place to turmeric and occupied the fourth place during the year. Cumin seed ranked as the fifth item with a share of 4.5 percent as against 3.2 percent in the previous year.

During 1973-74, 28 per cent of India's export of spices in terms of value were to the Middle East countries. The East European Zone accounted for 27.4 percent, stepping down from the first place to the second place. The share of Middle East Zone during 1972-73 was only 27.2 per cent and that of the East European Zone was more than 37 per cent. The share of American Zone has shown an increase to 21.7 percent in 1973-74 from 16.5 percent in 1972-73. During 1973-74, the U.K. and E C.M. Countries accounted for about 9.6 per cent as against 8.3 per cent in the previous year. East Asian Countries accounted for 9.5 percent in 1973-74 against 7.4 per cent in 1972-73.

In 1973-74, as in earlier years, East European countries were the important buyers of Indian pepper. Middle East Countries are ranked as the top buyers of Indian cardamom, ginger and turmeric. Major portion of the curry powder exports was to the U.K. and E.C.M. Countries. Exports of other spices were mainly to the East Asian Zone.

Pepper export from India during 1973-74 was an all time record in terms of quantity and value. Exports during 1973-74 which amounted to 31.648 tonnes valued at Rs. 295.30 million were higher by about 54 per cent in terms of quantity and more than 106 per cent in terms of earnings compared to the exports during 1972-73 of 19,958 tonnes valued at

Rs. 143.1 million Reduced supply from Indonesia, Brazil and Sarawak due to poor crop, reported increase in production in India, higher unit price realisation and the usual demand from East European Countries and substantial purchases by the U.S.A. were the factors which are responsible to this rise in exports of pepper during 1973-74.

During 1973-74, Eastern European countries ranked as the largest buyers of Indian pepper accounting for about 47.6 per cent of the total exports. During the year, India actually recaptured her lost market for pepper in the U.S.A. The export of pepper to U S.A. which was showing a declining and unsatisfactory trend has now registered increase of 7736 tonnes valued at Rs. 74.7 million from 2606 tonnes valued at Rs. 18.5 million in 1972-73.

Exports of cardamom from India have shown increase both in terms of quantity and earnings to 1813 tonnes valued at Rs. 115.50 million in 1973-74 from 1384 tonnes at Rs. 68.50 million in 1972-73. The increase in terms of quantity was about 31 percent but the rise in terms of earnings was around 69 percent. This was due to higher unit price realisation.

This year also Middle East Zone was the most important buyer of Indian cardamom. The share of Middle East Zone during 1973-74 was about 88 per cent as against 77 percent in 1972-73. Exports to the other countries were not very satisfactory.

During 1973-74, export of chillies from India was only about 617 tonnes valued at Rs. 4.1 million. During the previous year also exports were only 786 tonnes valued at Rs. 3.5 million. Average export of chillies was to the tune of '10,000 tonnes per annum during the past and more than 95 per cent of the exports were to Sri Lanka. The Government of Sri Lanka have banned import of chillies into Sri Lanka since 1972 and this has seriously affected the exports. The only alternative left was to increase the exports by finding out new markets and to increase exports to the markets where some entry has been already made.

In spite of a substantial increase in production of ginger during 1973-74 to 38.220 tonnes from 33.630 tonnes in 1972-73, its exports have shown a decline during 1973-74 to 5083 tonnes from 6051 tonnes in 1972-73. However, as a result of the higher unit price realisation, export earnings were higher at Rs. 25.6 million against Rs. 21 million, registering an increase of about 22 per cent though there has been a quantitative decline of about 16 per cent.

Exports of turmeric from India have shown a very substantial increase during 1973-74 both in terms of quantity and value compared to 1972-73. During the year, India exported 7921 tonnes valued at Rs. 36.50 million as against 6731 tonnes valued at Rs. 18.20 million in 1972-73. The increase in quantity exported was about 18 per cent. But the increase in earnings was more than double.

More than 40 per cent of Indian exports of turmeric were to the Middle East Countries during 1973-74. East Asia Zone accounted for about 17 per cent and American Zone accounted for about 16 per cent of the total exports of turmeric from India.

Exports of curry powder from India during 1973-74 were to the tune of 1843 tonnes valued at Rs. 7.4 million as against 1526 tonnes valued at Rs. 7.6 million, registering an increase in quantity but a decline in earnings.

Exports of other spices, namely coriander seed, cumin seed, fennel seed, fenugreek seed, garlic, aniseed, cassia, mace and tejpat from India have shown a very substantial increase during 1973-74 to 12,193 tonnes valued at Rs. 62.90 million from 8785 tonnes valued at Rs. 27.60 million in 1972-73. Exports of all these spices have registered a record in terms of earnings during 1973-74. The increase during 1973-74 in terms of quantity was about 39 per cent and that in terms of earning was more than 127 per cent compared to the last year. Exports of almost all items of this group have contributed to the increase in earnings. However, cumin seed and celery seed were the most important items. During 1973-74, about 41 per cent of the total exports of these items were to the East Asia Region. The American Region accounted for about 30 per cent.

Export of oils and oleoresins which was only Rs. 0.36 million during 1970-71 has increased to Rs. 2.1 million during 1973-74.

TREND IN EXPORTS OF PLASTIC PRODUCTS

India's export trade in plastics increased from a a meagre Rs. 7.6 million in 1960-61 to Rs. 1207 million in 1973-74. During 1972-73, the export value was of the order of Rs. 84 million while in 1971-72, it was Rs. 63 million. This clearly indicates the gradual uptrend in the export trade.

The Indian plastic industry expects to reach a target of Rs. 300 million worth of export trade by the end of 1978-79.

Till recently, India was importing all varieties of plastic goods including small requirements, such as, for fountainpens and buttons. But the industry has now become self-sufficient to meet the growing indigenous needs and has also entered the export market in a big way. It has been exporting not only household moulded plastic products but also other products, such as, industrial components, gramophone records, plastic bangles, p.v.c. leather cloth and sheeting, plastic electrical accessories, p.v.c. pipes, polyethylene woven sacks for packaging, spectacle frames, dental products, fabricated products, like purses, suitcases and briefcases imitation jewellery and so on.

On the basis of detailed studies undertaken by the Plastics and Linoleum Export Promotion Council, Bombay, on India's export potential in the line, it has been identified that the products which have export growth potential include p.v.c. leather cloth and sheeting, spectacle frames, special mouldings, electrical and electronic components, travel ware, pipes and conduits, polylined jute and synthetic sacks, plastic imitation jewellery, floorings and toys.

RAILS AND RAILWAY CONSTRUCTION MATERIALS FOR EXPORT

India - manufactured rails and railway track construction materials witnessed keen overseas interest during 1973-74. The exports during the year nearly trebled to Rs. 34.75 million from Rs. 11.95 million in the preceding year. In fact, the export during 1971-72 were at Rs. 88.20 million.

During the year 1973-74, rails of iron and steel, sleepers and other Railway track materials were mainly exported to ten countries. Of the total export realisation in this year, rails secured as much as Rs. 28.15 million while sleepers and other materials earned the rest.

Korea Republic constituted the biggest buyer of rails having bought 15,746 tonnes of rails at a value of Rs. 19.75 million. Iran the second importing market purchased nearly 9200 tonnes at a cost of Rs. 8.40 million.

Sleepers and other railway track materials of iron and steel were imported by about 9 countries. Bangladesh imported worth Rs. 4.84 million (3175 tonnes), followed by Iran at Rs. 0.68 million (591 tonnes) and Canada Rs. 0.53 million (100 tonnes). Among others were included Iraq, Burma, New Zealand and Arab Republic of Egypt.

Indian railway technology has already made its presence felt in the export markets. A number of co-developing economies in Africa, South East Asia and Gulf countries have lately realised the competence of Indian Railways in the sphere of consultancy and supply of know-how.

INDIAN LOCKS POPULAR ABROAD

From Rs. 5.40 million in 1971-72 and Rs. 5.86 million in 1972-73, India's exports of locks, padlocks and keys improved to nearly Rs. 7.90 million in the following year. The exports registered about 40 per cent increase over the export value in 1972-73.

In the total export realisation during 1973-74, padlocks secured nearly Rs. 4 million, registering a moderate increase over the exports at Rs. 3.15 million in 1972-73 and Rs. 1.31 million in 1971-72. Amongst nearly two dozen overseas markets, Poland emerged as the largest single buyer at Rs. 2.40 million while in 1972-73 German Democratic Republic was the leading importer at Rs. 1.23 million. Czechoslovakia, Netherlands and USA were significant among other countries during 1973-74 while Poland, Czechoslovakia, Federal Republic of Germany and USA were prominent importers in 1972-73.

The export of locks and keys brought in Rs. 3 90 million which was higher than that in 1972-73 at Rs. 2.72 million. The export value in 1971-72, however, was yet higher at Rs. 4.10 million. German Democratic Republic (Rs. 1.14 million), Poland (Rs. 1.12 million), UK (Rs. 0.23 million), Kenya (Rs. 0.31 million), Malaysia (Rs. 0.18 million), USA (Rs. 0.13 million) and Czechoslovakia (Rs. 0.12 million) were the significant markets in 1973-74.

In 1972-73, Bulgaria, Yugoslavia, Hungary, Poland, German Democratic Republic and Federal Republic of Germany were the principal importing destinations.

India's export range in locksmith wares covers a number of items, such as, locks, padlocks and keys, door/window hinges, tower bolts, door and window fittings and base metal fittings. During 1973-74, Indian locksmith wares brought in foreign exchange at Rs. 17.15 million.

BOOKS AND PERIODICALS EARN MORE FOREIGN EXCHANGE

India-produced printed matter is gaining wide popularity abroad in recent years. The foreign exchange earnings earned by it during 1973-74 at Rs. 28.75 million was the maximum in the preceding three years. The exports were Rs. 13.60 million in 1970-71, Rs. 17.70 million in 1971-72 and Rs. 19 million in 1972-73.

A wide variety of printed matter produced in India is sought by a large number of countries every year. During 1973-74, printed books, journals and periodicals, newspapers, picture postcards, paper/paper-board calendars, plans and drawings, pamphlets and booklets, paper or paperboard printed advertising matter, printed posters, printed pictures and photographs and trade catalogues were supplied abroad.

Printed books constituted the most popular item abroad during 1973-74. These secured foreign exchange worth as much as Rs. 15.15 million as compared to Rs. 11.65 million in the preceding year. Bangladesh emerged as the biggest market for Indian books which brought worth Rs. 3.90 million. USA constituted the second important buyer at Rs. 2.40 million UK, the next best importer, at Rs. 1.40 million was closely followed by Arab Republic of Egypt at Rs. 1 34 million. Among other buyers, Singapore, Malaysia, Nepal, Sri Lanka, Saudi Arabia, Afghanistan, Kenya and Mauritius were prominent.

Next to printed books, journals and periodicals brought in increased foreign exchange earnings during 1973-74 at Rs. 2.50 million as against Rs. 2 million. UK, Malaysia, Kenya, Dubai and Abu Dhabi were the principal importing destinations.

Newspapers which had secured Rs. 1.26 million during 1972-73, earned increased foreign exchange earnings during the year under review at Rs. 1.85 million. Over 38 countries imported Indian newspapers during 1973-74. Amongst these, Bangladesh, Kenya, UK, Nepal, Kuwait and Qatar are prominent.

Apart from the above, picture postcards were supplied at Rs. 1 million, paper and paperboard calendars at Rs. 1 million, pamphlets, booklets and brochures at 0.50 million and other printed matter at Rs. 4.70 million.

ORDERS FOR BICYCLE PARTS IN COLOGNE FAIR

Indian bicycles exhibited at the International Bicycle and Motorcycle Fair held in Cologne, West Germany, from 21st to 25th, September, 1974 aroused keen interest among visitors. On the spot orders valued at Rs. 1.2 million were booked by the Indian bicycle manufacturers during the fair period. Apart from this, business currently under active negotiations amounts to about Rs. 20 million. In all, 13 Indian bicycle and bicycle part manufacturing firms had participated in the Exhibition for the second time under the organisation of the Engineering Export Promotion Council, Calcutta.

Manufacturing technology in respect of bicycles and ancillaries has attained a stage in India which can satisfy even the requirements of the most sophisticated users at home and abroad.

The export graph of Indian bicycle industry is consistently indicating an uptrend in recent years. The exports which were hardly Rs. 69 million in 1970-71 rose to Rs. 80.40 million in 1971-72, Rs. 105.50 million 1972-73 and further shot up to fetch more at Rs. 147 million in 1973-74. During 1973-74, Iran, Nigeria and USA constituted the principal importers of complete bicycles while bicycle parts and accessories, such as, free-wheels, chains, rims, spokes, saddles, hubs and other parts were purchased by a large number of countries among which Italy, Indonesia, France, USA, UK and Thailand are prominent.

In the organised sector, there are 14 units engaged in the manufacture of complete bicycles and their licensed capacity is of the order of 3.73 million numbers. Their total production during 1973-74 was 2.6 million numbers as against 1.80 million numbers in the preceding year. In the manufacture of bicycle ancillaries and parts about 300 units are engaged in the production in the small sector.

COIR EXPORTS UP

Foreign exchange earnings from overseas supplies of Indian coir and coir products during the first half of 1974-75 (April-September 1974) secured Rs. 80.50 million as against Rs. 62.50 million in the corresponding period of 1973-74. In terms of quantity, about 198.90 million kgs. were supplied abroad as against 191.50 million kgs. during the same period of 1973-74 according to Coir Board, Cochin.

Barring curled coir, all the varieties of coir registered significant increase in their overseas offtake during April-September 1974 as compard to the same period of 1973. For example, coir mat exports rose to Rs. 32.80 million from Rs. 25.90 million while coir yarn fetched Rs. 34.55 million (109.22 million kgs.) compared to Rs. 30.82 million (112.55 million kgs.). Apart from these significant varieties, coir rugs and carpets earned Rs. 5.27 million (9.90 million kgs.) as against only Rs. 0 04 million (88,000 kgs), coir ropes Rs. 0.11 million against Rs. 0.08 million and coir fibre Rs. 0.10 million against Rs. 0.09 million. Curled coir exports, however, came down marginally to Rs. 0.58 million (4.44 million kgs.) from Rs. 0.68 million (5.3 million kgs.).

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

ON ENTERTAINMENT ELECTRONICS INDUSTRY

The production of India's electronic industry was of the order of Rs. 2070 million during 1972-73. During the Fifth Five-Year Plan period, it was to invest an outlay of about Rs. 200 million which is expected to release a manifold rise in the production. The output at the end of the Fifth Five Year Plan is estimated at about Rs. 6500 million. The major areas of production in the consumer electronic equipment industry in India are radios, T. V. receivers, tape recorders, record players, record changers, amplifiers, microphones, loudspeakers and hearing aids. The production value of entertainment electronics and mass communication items totalled Rs. 650 million during 1972-73. The estimated production value by 1978-79 in the consumer electronic equipment industry has been placed at Rs. 1358 million.

The licensed capacity of radios is about 4.2 million numbers. Actual production per year is around 3 million of which 2 million are in the organised sector and the rest in the small scale sector. The bulk of radio production in the small-scale sector is of the low cost transistor variety which is reserved for that sector. The demand for radios is expected to increase significantly in the years to come. It is estimated that demand will go up to 6 million numbers by 1978-79. It is also expected that sizeable export market will develop by that year particularly for low cost transistor radios.

The licensed capacity for television receivers is 110,000 numbers per year, distributed among 11 companies in the organised sector. In addition, there are 68 small scale units with an approved capacity of about 200,000 numbers. The total production is currently of the order of 100,000 sets per year of which roughly 60 per cent is produced in the small scale sector. By the end of the Fifth Five Year Plan (1978-79), the estimated demand for T.V. receivers will be about 300,000 per year. Thus the existing capacity is by and large adequate to meet the demand. In addition, close circuit television system may have scope for development in the future to cater to the demand from institutions such as banks, hospitals and airports.

A large capacity of 792,000 numbers per year has already been approved for the production of tape recorders (both in the organised (260,000) and small-scale (532,000) sectors. The actual production of tape recorders have, however, been comparatively limited (about 40000 per year), based mostly on imported kits and sub-assemblies. This has been mainly due to the fact that important components required for the manufacture of tape recorders such as tape deck, micromotors, record and erase heads are not being manufactured in India on a commercial scale. A few parties have been, no doubt, approved for these items. It is expected that by 1978-79 the demand for tape recorders will be about 200,000 a year mostly of the cassette type.

Production of amplifiers and public address system primarily in the small sector is of the order of 80,000 numbers per year. By the end of the Fifth Five Year Plan, the demand is expected to increase up to 200,000 numbers.

Production of record players in the organised sector is around 85,000. The demand is expected to go up to 200,000 by 1978-79. With the anticipated domestic demand and good export possibilities to the extent of 50,000 numbers a year in view, the need for larger production in the small and medium sectors of low cost record players needs no overemphasis.

Production of hearing aids is at present in the small scale sector with a capacity of 22,000 numbers per year. In addition, a large number of miscellaneous devices for a variety of applications are also sought to be developed in the consumer electronics industry. Kits for educational purposes in schools and colleges, microwave ovens are but examples.

SPOTLIGHT ON SMALL-SCALE INDUSTRIES

In the Indian context, small-scale industry is defined as one with an investment in plant and machinery of not more than Rs. 750,000. A higher limit of Rs. 1 million of investment in plant and machinery has been prescribed for the ancillary industry.

In view of the significance of the small scale industry in India's programme of industrial development the Government of India launched schemes to provide comprehensive assistance to the small entrepreneurs right from the stage of selection of items of manufacture to marketing the final product. The Small Industries Development Organisation (SIDO) of the Ministry of Industrial Development is the concerned authority to organise the assistance programmes including the provision of economic, technical and managerial services, assistance in modernisation and technological development and guidance in the procurement of machinery, factory sites and finance.

With a view to assuring a protected field of industries where small entrepreneurs can operate without fear of competition from the large scale concerns, the Government of India reserved 177 items for exclusive manufacture in the small scale industry. The articles reserved for the small scale sector include : barbed wire, bolts and nuts, water meters, wire products, household knitting machines, diesel engines up to 15

h. p; centrifugal pumps up to size 4" among mechanical engineering industries; electric iron, heaters, washing machines, industrial washing and dry-cleaning machines, electric light fittings such as chokes, starters and reflectors, electric wire accessories, miniature bulbs, AA and ACSR conductors up to 19 strands etc. among the electrical industries; assembly of loudspeakers, telescopic aerails, low cost radio receivers (below Rs. 200) etc. among the electronic industries; a wide range of automobile ancillary industry, garage equipment, selected chemical industries, glass and ceramic industries, leather footwear and plastic processing products as also wood-based industries like safety matches and truck body building (wooden structures).

In addition to the facility of reserving industries for its exclusive manufacture, the small scale industry also receives technical assistance for preparing detailed schemes for establishing units, the facility of training programmes to improve technical skills of workers and equipping entrepreneurs with advanced production and management techniques as well as finacial assistance.

Financial help is provided by the State Directors of Industries, State Financial Corporations and scheduled commercial banks, both for long/medium term and the short/working capital. Under the State Aid of Industries Act, the State Governments provide finance in the form of loans, guarantees for loans riased from banks, subscriptions of shares and debentures etc. Also State Finance Corporations established in all the States of India provide medium and long term finance to small industries within their own funds as also disbursing loans as agents of the State Governments. The small scale industries also have the facility to secure machinery on hire-purchase basis.

As regards the raw material procurement, small scale units are entitled to import raw materials on liberal basis, according to the annual policy of import trade cotrol. Under the import policy for 1974-75, the Small units engaged in priority industries are entitled to secure imported raw materials on single shift capacity basis while the units in the non-priority industries are entitled to a value limit of 40 per cent of the value of machinery installed subject to a maxium of Rs. 100,000. In case of units to be set up by graduate entrepreneurs, ex-Army Personnel and units set up in backward areas, the import policy has been further liberalised. For indigenous iron and steel items, small scale units are to apply to the State Small Industries Corporations through whom distribution of iron and steel items is executed. As regards other indigenous raw materials which are controlled by the Government, bulk allocation is being made through the Development Commissioner of Small Scale Industries and the small scale units are to apply to the State Directorate of Industries for their requirements of these raw materials.

Thus the industiral and import licensing policies followed by the Government of India encourage the growth and diversification of the small scale industries in the country. The small scale sector contributes substantially, not only to the overall industrial production of the economy but also its export growth.

KALOL FERTILIZER PLANTS GO ON PRODUCTION STREAM

The urea and ammonia plants of the Kalol Fertilizer Project, India's biggest in the cooperative sector, have gone on production stream.

The Kalol project is one of the two fertliser units being put up by the Indian Farmers Fertiliser Cooperative Limited (IFFCO), the other plant being at Kandla, also in Gujart.

Based on natural gas, the cheapest fertiliser feedstock to-day, to be supplied by the Oil and Natural Gas Commission of India from the nearby oil fields in the region, the capacity of urea plant will be 1,200 tonnes a day and that of ammonia plant 910 tonnes per day. The plants are expected to attain full capacity in about six months. This will result in considerable saving of foreign exchange in import of fertilisers and help to step up cereal production in the country.

Estimated to cost about Rs. 640 million, the Kalol project has been completed as scheduled in two and a half years. It has an indigenous content of 67 percent, the highest for a project of its kind. Both the plants are the first of their kind in India and the urea plant is considered to be the largest of its kind in the world.

About 200 tonnes of ammonia produced at Kalol will be transported every day to the ammonia base Kandla unit of IFFCO for conversion to NPK products. The Kandla unit will also start very shortly. It is estimated to cost Rs. 300 million and will use ammonia from the Kalol unit to produce 3,75,000 tonnes of NPK (balanced) fertiliser annually. The Kandla unit will not need the entire quantity of ammonia available at Kalol. The surplus thus left is proposed be sent to Nangal and Trombay fertiliser plants. Two rakes are reported to be under construction for the prupose in collaboration with the Fertiliser Corporation of India.

The products of Kalol and Kandla will be distributed in the 10 States that own shares in IFFCO according to the proportion of their share holdings. These states are U. P., Punjab, Haryana, Gujarat, Rajasthan, Madhya Pradesh, Maharashtra, Andhra, Karnataka and Tamil Nadu.

Apart from the Kalol and Kandla plants, the IFFCO also proposes to set up a plant at Phulpur in Uttar Pradesh for which a $ 109 million loan is stated to have been negotiated with the World Bank. The Phulpur plant will involve an investment of Rs. 1600 million as against Rs. 940 million for the Gujarat plants.

IMPORT SUBSTITUTION IN D. C. MILL MOTORS

Soviet-designed motors in Bhilai Steel Plant will be substituted by those designed by the Bharat Heavy Electricals Limited, Bhopal. This is an important step of the Bhopal factory towards import substititution.

The Hindustan Steel Limited have entrusted BHEL, Bhopal to design and maufacture such D.C. mill motors valued nearly Rs. 100 million for their Bhilai Steel Mill Expansion Project.

BHEL, Bhopal, motors will help augment the capacity ot Bhilai Steel Plant from 2.5 million tonnes to 4 million tonnes. These special motors will be used for roller table drives of 3600 millimetre plate mill.

BHEL engineers undertook timely design and development of a proto-type slow speed high torque motor in MDX frame which has finally resulted in undertaking the huge requirement of Bhilai.

SCOOTAR—CAR DEVELOPED

A light weight three-wheeler small scootar-car - built in the joint sector of India (public sector and private sector) in collaboration with the Andhra pradesh Small Scale Industrial Development Corporation has been recently released on road. The scootar-car has a fuel consumption of 28 km per litre and is capable of achieving a top speed of 60 kmpha and cruising speed of 40 kmph. It has a polystar reinforced glass fibre body and two front wheels and a rare wheel.

The three-wheeler measures 325 cm in length and has a maximum width of 145 cm and is 135 cm high from the ground. It can accommodate two adults and 2 children.

The licensed capacity of the joint sector plant at Renigunta in Chittoor district is 1000 cars per year.

Another model of a three-wheeler car was produced by a Bangalore firm which has already received a licence to manufacture 3,000 cars per year.

DIRECTION PATTERN OF INDIA'S EXPORT TRADE

(In Million Rs.)

Region	1973-74	1972-73
Africa	**1009.10**	**1011.20**
Arab Republic of Egypt	148.20	317.20
Sudan	185.70	207.10
Nigeria	112.40	96.50
Kenya	101.20	55.00
Tanzania	68.60	30.10
North America	**3735.60**	**3039.40**
U.S.A.	3427.80	2757.40
Canada	307.80	282.00
Latin America	**120.80**	**42.80**
Argentina	64.20	7.70
Brazil	22.40	4.90
Other American Countries	**25.60**	**21.80**
ECAFE Countries	**7308.00**	**5680.50**
Japan	3551.20	2171.60
Iran	427.30	247.70
Australia	503.90	259.80
Hong Kong	361.30	201.40
Afghanistan	150.00	125.20
Bangladesh	587.30	1682.40
Singapore	429.30	178.40
Nepal	288.90	350.70
New Zealand	134.00	82.50
Other Asian and Oceanian Countries	**1390.10**	**738.90**
Kuwait	208.60	149.50
Iraq	199.80	109.80
Saudi Arabia	258.40	121.40
East Europe	**4780.60**	**4697.30**
U.S.S.R.	2837.90	3048.20
Czechoslovakia	416.50	461.00
Poland	488.70	441.80
Bulgaria	196.50	188.80
German Democratic Republic	216.20	151.10
Yugoslavia	235.50	124.40
European Economic Community Countries	**5943.10**	**4077.20**
Belgium	438.60	301.30
Denmark	129.00	56.80
France	485.90	459.00
Federal Republic of Germany	822.50	622.80
Ireland	90.90	69.50
Italy	683.70	488.50
Netherlands	708.60	354.00
U.K.	2583.90	1725.40
EFTA Countries	**419.40**	**278.00**
Sweden	140.60	161.60
Switzerland	118.10	79.30
Other European Countries	**199.80**	**121.10**
Spain	114.40	39.70
Turkey	38.40	52.10
Greece	23.00	16.90
Grand Total of Exports (Including Re-exports)	**24,832.20**	**19,708.30**

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

RESEARCH IN TEXTILES

Research work pertaining to almost every field of manufacture has been given priority in India's industrial sector as also for development of technical know-how at home itself. Like other areas of manufacture, the textile sector has also not lagged behind in the research field.

The Ahmedabad Textile Industry Research Association (ATIRA), Ahmedabad, an important research institution in the textile field has to its credit the development of a series of new products and processess, partly as a systematic programme of import substitution and partly to meet pressing needs of the Indian Textile Industry.

A number of products and processes, have been developed by ATIRA, so far. It has developed a low viscocity tamarind kernel powder (LTKP) from tamarind seeds which was expected to replace starches to a considerable extent. The potential availability of LTKP was 90,000 tonnes. This process for LTKP was licensed to two indigenous firms so far. It is reported that these firms are manufacturing this for the last one and half year and produced a total of 1500 tonnes so far.

ATIRA has also developed a process of bleaching, which has already been released to its member mills in June 1974. The principal characteristic of this method is that it is not only less expensive but involves less duration than the conventional one for polyester cotton fabrics. It is learnt that as many as 60 textile mills have adopted this process. ATIRA's other developments include a catalyst capable of giving satisfactory results under much milder conditions - at 110°C for 1-2 minutes (30 textile units are using the catalyst since its introduction in December 1973), similar other catalysts for wash and wear finishing (being used by 8 mills) and a substitute for sodium alginate based on indigenous gums and comparable with sodium alginate in performance but far inexpensive (The process has been adopted by one mill in Ahmedabad).

The institution has also developed an improved method for hypochlorite oxidation of starches in 1967. These starches are claimed to be superior in several respects. This process is also licensed to a unit which is producing about 700 tonnes per annum since 1970. With the manufacture of these starches indigenously, imports of these have been stopped which resulted in a sizeable saving in foreign exchange. These are presently used in the paper industry for surface sizing and pigment coating.

In the field of textile instruments and machinery also ATIRA made a good headway. It has supplied five machines for waste heat recovery to textile manufacturing units. It has also completed a design of a yarn mercierising machine with indigenous materials and components.

SPECIAL TYPING PAPER DEVELOPED

The Regional Research Laboratory at Jorhat has developed a special typing paper which provides multiple copies without the use of carbon inserts.

Called direct copy paper, it eliminates the need for carbon paper for taking copies of the original. Each sheet of the direct copy paper is coated with suitable chemicals which pass on the impression to the next sheet. Several copies can be obtained using a typewriter or a ball-point pen.

The National Research and Development Corporation (NRDC) is planning to release the RRL process to industries. According to NRDC, the direct copy paper can be used - apart from airline tickets - in cheques, country machines, computers, receipts and vouchers, speceial forms and tags and in teleprinters.

Though the Jorhat RRL process is not entirely new, so far direct copy paper has not been made in India. The process developed by RRL is thus

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likely to result in appreciable saving in foreign exchange spent on import of this paper. At present, Indian Airlines alone is importing Rs. 3 million worth of direct copy paper and Air India also buys worth sereral thousand rupees.

Raw materials required to make direct copy paper are base paper, wax polymer, hardner, pigments, fillers and solvents which are all available within the country.

NEW TECHNOLOGY FOR RICE MILLING PERFECTED

A new rice milling technology, which will result in higher out-turn of rice and utilisation of bran for making edible oil, has been perfected and developed by the paddy processing research centre at Tiruvarur in Tanjavur district. The new technology involves addition of a few mechanical units to the existing hulling units to separate the function of de-husking from polishing and introduction of new units for grading of de-husked paddy before polishing.

The food Corporation of India, which partly financed the research project, has already experimented the new technology in a hired rice mill at Kuttalam in Tanjavour dissrict. With an investment of Rs. 20,000 in modifications to the mill, the additional recovery of rice and bran fetched an additional return of Rs. 48,587 a year.

The demonstrated additional profit that would accrue from such modification has provided the necessary financial incentive to the owners of the traditional mills. Eight of them have already modified their units while eight more have sought the advice of the Research Centre for such modification.

It is hoped that by adopting the new technology, the country will get at least 0.5 million tonnes more of rice and at least 0.30 tonnes of edible rice bran oil.

The Kuttalam mill which processes about 8.5 tonnes of paddy per day, now produces one additional quintal of rice daily. It also produces 400 kg. of bran daily which has 22-23 per cent of oil content.

Besides introducing new mechanical units, the new technology also involves treatment of water used for soaking paddy with sodium chromate to eliminate the unpleasant odour of par-boiled rice and minimise the losses.

The Research Centre has also developed the design for a "boiler-cum-drier" using paddy husk, which is presently wasted, as a fuel. The ash obtained from burning paddy husk is a rich source of silica oil which is a raw material for the industry.

To utilise the oil-rich rice bran that would be available from the Kuttalam mill from this year, the Food Corporation is setting up a rice-bran extraction plant at Sembarnarkoil in Tanjavur district. The 15 tonne plant with an investment of Rs. 15,00,000 is due to be commissioned by end of this year. ☐

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COMPLETE COKE OVEN PLANT TO HUNGARY

India is to supply a complete coke oven plant to Hungary. A Memorandum of Understanding was signed between the two countries recently to this effect. The Agreement was in pursuance of the decision taken at the meeting of the Indo-Hungarian Joint Commission held in New Delhi during October-November, 1974.

There were detailed discussions between India and Hungary on India supplying the coke oven plant on a turn-key basis. The Hungarian delegation had earlier visited the various Indian steel plants and the Heavy Engineering Corporation at Ranchi. They were highly impressed by the technical competence achieved by India in the setting up and operation of steel plants.

Subject to mutual agreement being reached on technical and economic details, the project would be executed by the Engineering Projects (India) Limited, a public sector undertaking under the Department of Heavy Industry.

The possibilities of executing ventures in third countries jointly by the Engineering Projects (India) Limited and the corresponding Hungarian organisation were also discussed. It was felt that India could supply arc furnaces and continuous casting machines for mini steel plants besides machine tools and other equipment for general engineering workshops and foundries.

The Joint Working Group on Trade Exchanges set up at the first meeting of the Indo-Hungerian Joint Commission for Economic, Scientific and Technical cooperation recently met (October 1974) and discussed various matters related to Indo-Hungarian trade relations. The Working Group reviewed the trading relations between the two countries in recent years and expected that the total trade turnover between the two countries during 1974 would be of the order of Rs. 450 million showing an increase of about 40 per cent over the turnover of 1973. The Group also discussed the prospects of improving the exports of non-traditional goods from India to Hungary. It was hoped that the proposals for technical cooperation and collaboration under various fields which were separately under consideration would provide scope for expansion of trade between them and facilitate longterm arrangements with respect to several commodities from both sides. The Group further agreed that the shipping organisations of the two countries would explore possibilities of concluding bilateral shipping arrangement to ensure smooth flow of trade.

India's two-way trade with Hungary grew substantially from a meagre Rs. 90 million in 1963 to over Rs. 320.4 million in 1973. In 1973, Indian exports to Hungary were of the order of Rs. 208 million while her imports from that country totalled over Rs. 112 million. In 1972, the value of Indian exports was Rs. 137 million while her imports from Hungary were worth over Rs. 128 million.

ELECTRONIC PRODUCTS FOR EXPORT

India's export trade in electronic products amounted to Rs. 7.5 million in 1973-74, registering an increase of 25 per cent over the export value in the preceding year.

In tune with this rising export trend, M/s. Weston Electronics (P) Ltd. (Industrial Estate Okhla New Delhi) have succeeded in earning Rs. 8 million worth of foreign exchange so far in the current financial year through export of their electronic products to over 40 countries of the world.

Lately, the firm has added their sixth electronic product-record player, to its production range. In fact, trial orders for this product have already been received from U.K. The company hopes to export about 10,000 pieces during 1975 to European and African markets.

India officers a wide variety of electronic items to world markets. The range broadly covers radio receivers, television sets, teleprinters, computers, desk calculators, record players, transistors and diodes, receiving valves, TV picture tubes, transmitting tubes, cathode ray tubes, microwave tubes, crystals, carbon film resistors, potentio metres, loudspeakers, gang condensors, switches, paper capacitors, ceramic capacitors, ferrites, mica capacitors, plastic film capacitors, electrolytic capacitors, ferrites, permanent magnets and a large number of other sophisticated items in the line.

The total output of the industry improved to Rs. 2420 million in 1973-74 from Rs. 2060 million in 1972-73 and Rs. 1800 million in 1971-72. The production has reached this level from only Rs. 440 million about a decade back (1965-66).

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MACHINE TOOLS TO WORLD MARKETS

The export value of Indian machine tools which was of the order of only Rs. 7.5 million in 1965-66 increased to about Rs. 21 million in 1972-73 and an estimated Rs 36.80 million in 1973-74. The products of the industry are sought by a number of countries including even USA, Canada, Australia, New Zealand and European countries.

Contributing to the export effort in the line, M/s. Gujarat Export Corporation Ltd., Ahmedabad, have been able to export over 400 lathes during the last 3 to 4 years. The export destinations included the UK, West Germany, Netherlands, Australia and New Zealand beside developing countries, such as, Malaysia, Thailand and Singapore. In addition to lathes, the Corporation has also succeeded in exporting 100 radial drilling machines.

In India, Machine tool industry's total production during 1973-74 was estimated at Rs. 640 million. In 1972-73, actual production was of the order of Rs. 527 million. The present installed capacity of the industry is estimated at Rs. 900 million. Taking into account the estimated production during 1973-74, the capacity utilisation works out to about 70 per cent. In the field of import substitution also, the industry has achieved significant strides; the import content which was around 21 per cent during 1969-70 was reduced to a level of about 11.8 per cent during 1972-73.

CALCULATORS ON EXPORT STREAM

India - manufactured statistical machines and calculators are picking up overseas demand in recent years. During 1973-74, their exports secured foreign exchange worth Rs. 37.20 million.

Japan is the largest buyer of Indian statistical machines. Its imports were valued at about Rs. 26 million during 1973-74, followed by Australia which imported worth Rs. 6.12 million. Among others, Philippines and New Zealand were prominent. Calculating machines (electrically and manually operated) and parts were purchased mainly by Hungary and UK.

M/s. Facit Asia, (Peruneudi, Madras) which is a manufacturer of hand-operated calculators and adding machines, exported these products at a value of over Rs. 1 million during 1973-74. The firm proposes to deversify its production range to include new items, such as, typewriters. Only recently, it has obtained a letter of intent to manufacture 20,000 typewriters per annum.

India's total exports of office machines nearly doubled to Rs. 40.50 million in 1973-74 from Rs. 22 million in 1972-73. The export range of machines included typewriters, calculating machines (electrically and manually operated), statistical machines, duplicating machines and parts. Japan, Australia, Philippines, New Zealand, Indonesia, France, UK, Singapore and Hungary were the leading buyers.

EXPORT PERFORMANCE AND POTENTIAL

ON IRON ORE EXPORTS

India's export trade of iron ore and concentrates totalled 23.75 million tonnes valued at Rs. 1328.30 million during 1973-74 as compared to 20.6 million tonnes worth Rs. 1098 million in 1972-73, 19.9 million tonnes worth Rs. 1047 million in 1971-72 and 21.79 million tonnes worth Rs. 1172.86 million in 1970-71.

The major importer has been Japan whose intake was 19.24 million tonnes (Rs. 1081.10 million) in 1973-74, 17.59 million tonnes (Rs. 918.20 million) in 1972-73, 16.95 million tonnes (Rs. 863.30 million) in 1971-72 and 17.45 million tonnes (Rs. 931.54 million) in 1970-71. Other important importers have been Rumania, Czechoslovakia, Poland, Hungary, Belgium, U. K., and the Federal Republic of Germany.

India has vast resources of iron ore estimated at a total tonnage of 10,171 million of which measured resources amount to 5,376 million tonnes, indicated resources 2,070 million tonnes and inferred resources 2,725 million tonnes. In India, commercial exploitation of iron ore is confined mainly to hematite ore. Iron ore deposits are located almost in every State in the country and richer deposits have been confined to Bihar, Orissa, Madhya Pradesh, Goa, Maharastra and Mysore.

The production of iron ore in India amounted to 35.2 million tonnes in 1972, and 34.2 million tonnes in 1971. Indigenous steel industry's annual requirements of the ore are around 16.5 million tonnes. It would be found thus that the country has sufficient surplus of iron ore to export.

Export of iron ore in India was canalised in 1957. The ore of Goan origin was, however, kept outside the purview of canalisation.

As against actual exports of 23.75 million tonnes valued at Rs. 1328 million during 1973-74, the target for export of iron ore during 1974-75 has been fixed at 27 million tonnes valued at Rs. 1750 million. The target for export of the ore by 1978-79, the terminal year of the Fifth Five Year Plan, has been fixed at 35 million tonnes. At current prices, approximate value of the targetted exports by that year would be Rs. 2200 million.

During the second U. N. Conference on Trade and Development (UNCTAD II) held in New Delhi in February-March 1968, the question of uneconomic exports of iron ore by developing countries was discussed and it was felt that the developing iron ore exporting countries should meet and discuss their problems from time to time so that they could put up a joint front at the inter-governmental consultations. These meetings came to be known as the meetings of the Iron Ore producers' Club. The Club met seven times informally and sought to broadbase it by the inclusion of developed countries also, The developed countries which were hesitant in the beginning, realised the need for working in concert, particularly after devaluation of U. S. Dollar and since February 1973 have been participating as observers in the meetings. A Ministerial Meeting was held recently (November 4-6, 1974) which was atteneded by nine members (Algeria, Australia, Brazil, India, Mauritania, Peru, Philippines, Tunisia and Venezuela) and four observers (Bolivia, Canada, Chile and Sweden). This Ministerial Meeting for the Group of Iron Ore Exporting Countries expressed concern at the unfavourable trend in terms of trade for the exporters of iron ore and affirmed the need for close economic cooperation among producers of iron ore. It was decided to establish a preparatory Committee of Senior Officials to examine the form of and detailed provisions for an Association of Iron Ore Exporting Countries for consideration of the Ministerial Meeting scheduled to be held in March-April, 1975.

Of the total world production of iron ore at 793.8 million during 1973, the leading producer was U.S.S.R. at 216 million tonnes, followed by Australia (175 million tonnes), France (60.8 million tonnes), Canada (44 million tonnes), Brazil (42.5 millian tonnes), India (35.2 million tonnes), Sweden (34.5 million tonnes), Liberia (21.5 million tonnes), Venezuela (19 million tonnes) and Chile (13 million tonnes).

EXPORT TRADE IN SUGAR

Approximately 330,000 tonnes of sugar valued at Rs. 1435.60 million have been exported by India so far during the current financial year (1974-75). Of this, the State Trading Corporation of India exported about 259,400 tonnes worth Rs. 1192.20 million (194,665 tonnes of white sugar at a value of Rs. 945.44 million and 74,732 tonnes of raw sugar at a value of Rs. 246.80 million). The Food Department of the Government of India exported 70.375 tonnes worth Rs. 243.40 million (44,975 tonnes of white sugar at a value of Rs. 204.80 million and 25,400 tonnes of raw sugar at a value of Rs. 38.60 million).

India has been exporting sugar to the world markets since 1957. Exports during 1973-74 and 1972-73 were 99,000 tonnes and 195,000 tonnes respectively. For the current financial year (1974-75) the Government of India, have decided to export 500,000 tonnes of the item.

Sugar is not canalised for export through the State Trading Corporation of India, but there is a separate enactment for controlling its exports. Under the enactment entitled 'Sugar Export Promotion Act, 1958', the Ministry of Agriculture, Government of India, specified the Indian Sugar Export Corporation Limited, Delhi as export agency, effective from January 1970. Sugar exports were, however, entrusted to the STC from early April 1974.

India is one of the major producers of cane sugar; other important producers being Brazil, Cuba, Australia, Mexico, U.S.A., China and Philippines. India's annual production of sugar totalled 3.11 million tonnes in 1971-72, 3.87 million tonnes in 1972-73 and 3.95 million tonnes in 1973-74. Its production in 1974-75, has been estimated at 3.80 million tonnes. A target of 6 million tonnes has been fixed for its production by the end of the Fifth Five Year Plan (1978-79) by which year the licensing capacity of the sugar industry is targetted to go up to 7 million tonnes. Against the target for licensing this capacity, licenses have so far been accounted for effecting expansion in 18 existing units, thereby raising the licensing capacity of the industry to 6.83 million tonnes. There are at present 244 sugar factories with a total installed capacity of 4.31 million tonnes. The total number of licensed factories at present is 347. Proposals for the establishment of new factories as well as for expansion in the existing units are under further examination.

RISE IN PLASTIC GOODS EXPORT

India's exports of plastic and linoleum products earned Rs. 68.75 million during the first half of 1974-75 (April-September 1974) as compared to Rs. 44.35 million in the corresponding period of 1973-74, according to the Plastics and linoleums Export Promotion Council, Bombay. The export target for the full year of 1974-75 has been set at Rs. 150 million.

During April-September 1974, plastic products accounted for the bulk of foreign exchange earning at Rs. 62.20 million while the share of linoleum products was of the order of Rs. 6.56 million. In the same period of the preceding year, the respective shares of both the categories of products were Rs. 38.61 million and Rs. 5.75 million.

In the plastic group, a number of items registered improvement in their overseas offtake during April-September 1974. For instance, plastic moulded and extruded goods earned Rs. 8.95 million against Rs. 5 million (April-September 1973); PVC rigid and flexible pipes and conduits Rs. 10.20 million against Rs. 9 million; polyethylene/polypropylene, films, sheets, bags and woven bags and sacks Rs. 8.30 million against Rs. 3.80 million; plastic imitation jewellery Rs. 8.55 million against Rs. 5.75 million; plastic electric accessories Rs. 4.23 million against Rs. 2.58 million; laminates (phenolic melamine) Rs. 2.15 million against Rs. 0.57 million; PVC gramophone records and accessories Rs. 4.83 million against Rs. 3.26 million; plastic bangles Rs. 2.15 million against Rs. 1.92 million; PVC leather cloth Rs. 2.35 million against Rs. 1.33 million and PVC sheetings (including paper-based) Rs. 2 million against Rs. 0.60 million.

Apart from the above, plastic dental material and products, handbags, purses and other PVC fabricated goods, foam leather cloth and sheetings, plastic brushes and nitro cellulose cloth were the plastic products which brought in increased foreign exchange.

Among the plastic products which did not figure at all in exports during the period under review of 1973-74 but earned foreign exchange in the same period of the following year were included expanded polystyrene products, PVC foam products, polyethylene rigid and flexible pipes and polythene coated fabrics.

The export earnings of fountain pens, ball point pens, sign pens and fibre tip pens, however, came down to Rs. 2.40 million (April-September, 1974) from their earlier level of Rs. 4.20 million while those of spectacle frames declined heavily to Rs. 2.20 million from Rs. 6.50 million.

In the linoleums group, both the varieties of linoleums, i.e. jute based and felt based registered improvement in their overseas offtake during April-September 1974. For instance, jute based linoleum exports increased to Rs. 5.34 million from Rs. 3.62 million while those of the felt based linoleums looked up to Rs. 0.45 million from Rs. 0.22 million. Phenol formaldehyde moulding powder exports also improved to Rs. 0.28 million from only Rs. 37,000 while polyethylene jute combination exports came down to Rs. 0.26 million from Rs. 1.86 million.

EXPORT OF SHOES TO SOVIET UNION

The State Trading Corporation of India (STC) has signed a contract with the Soviet Union for the export of 600,000 pairs of leather foot-wear valued at about Rs. 26.47 million during the year 1975. The delivery of 250,000 pairs of footwear is to be effected by the first quarter and the remaining 350,000 pairs by the second quarter of the year 1975.

India's total exports of footwear were of the order of Rs. 133.85 million during 1973-74 as against Rs. 128.60 million in 1972-73 and Rs. 117.60 million in 1971-72.

All leather - closed toe footwear constituted the leading category of export dynamism which secured as much as Rs. 51.15 million during 1973-74. USSR aborbing as much as worth Rs. 33.15 million was the largest single buyer. Among other buyers USA, German Democratic Republic, Federal Republic of Germany, UK, Nepal, Australia and Canada are significant.

The next best variety active in exports during the year was that of all leather open-toe footwear. It earned Rs. 37.32 million. USA (Rs. 14 million), Australia (Rs. 10.25 million), Canada (Rs. 3.75 million), UK (Rs. 2.10 million) and Nepal (Rs. 1.25 million) were the prominent importers. Besides, rubber soled upper canvas footwear earned Rs. 27.50 million. UK, USSR, Zambia, Canada, Denmark and France were significant markets.

Other varieties exported included rubber soled upper leather footwear (Rs. 14.55 million), rubber footwear (Rs. 1.88 million), leather soled footwear, leather soled and embroidered uppers footwear and other footwear with sole and upper of rubber or plastic.

INDO-ROMANIAN TRADE TRENDS

Two-way trade traffic between India and Romania witnessed more than four-fold rise over the last decade. In 1963, the total trade was of the order of Rs. 75.5 million and in 1973, it reached a level of Rs. 314 million. During 1973, Indian exports to Romania totalled over Rs. 152 million while her imports were of the order of over Rs. 161 million. As with all other East European countries, (excluding Yugoslavia), India's trade with Romania is regulated by long term trade and payments agreement which provides for the settlement of all commercial and non-commercial transactions between the two countries in non-convertible Indian rupees. This is a balanced and bilateral form of trading and imports and exports are expected to balance each other over a period of time.

The Indo-Romanian Trade Plan for the year 1974 envisages a trade turnover of Rs. 900 million (Rs. 450 million each way), The major items of Indian exports to this country are iron ore, jute manufactures, de-oiled cakes, tanned and semi-tanned hides, skins and coffee. The major items of Indian imports from that country are fertilizers, steel and steel products, oil prospecting and oil drilling equipment and organic and inorganic pharmaceutical products as well as drug intermediates. The traditional items of India's export trade have formed over 85 per cent of the Romanian imports from India. The main reason for Romania not taking larger quantities of Indian non-traditional items is evidently the character of the economy of the two countries. Romania itself exports a variety of engineering goods. Also the rupee funds generated by Romanian exports to India of fertilisers and steel are hardly sufficient to cover her purchases of essential items from India like iron ore, hides and skins and soap. However, the share of non-traditional items in India's export trade to Romania is likely to increase in the future due to the fact that a sizeable Rupee balance in favour of Romania is expected to emerge due to long term arrangements of Romanian supplies of fertilizers.

An Indo-Romanian Joint Commission on economic, technical and scientific cooperation has been set up and its first meeting was held during September this year. The Commission functions through four working groups on trade exchanges, economic cooperation, scientific and technical cooperation and for drafting the Protocol of the Session of the Joint Commission. The Working Group on Trade Exchanges has estimated that the volume of mutual trade would amount to over Rs. 600 million in the year 1974. Both India and Romania agreed to work for further development and diversification of mutual trade so that by the end of 1975 the trade volume would reach Rs. 900 million both ways.

DETAILS OF TRADE AGREEMENTS DURING 1974

During January-October 1974, Trade Agreements or Exchange of Letters have been concluded or extended with Kuwait, Democratic Peoples' Republic of Korea, Bulgaria, Iraq, Senegal, Finland, Afghanistan, U.S.A., Republic of Korea, Iran, Austria and Bangladesh.

The Trade Agreement with Iraq provides for the import of dates, sulphur and other items (excluding oil) from that country and export of tea and other items (excluding complete project reports) from India. The Agreement signed with Kuwait is a Trade and Economic Agreement seeking to consolidate further economic and trade relations between the two countries. The Agreement with Senegal is pending for the approval of the Republic of Senegal. The Exchange of Letters with Finland contemplates setting up Joint Commission for expansion of mutual trade and economic cooperation. The Trade Protocol with France is in the nature of steps for the promotion and diversification of Indo-French trade and economic cooperation.

The Trade Agreement with USA concerning cotton textiles is valid for four years effective from October 1973 and the quota of textiles for the first year (October 1973-September 1974) would be 152 million square yards. Within the aggregate limit, two group limits would apply. For the first agreement year, the quota for first group concernig yarn and fabrics is 199 million square yards and 33 million sq. yards for the made-ups and garments under the second group. For the subsequent years of the Agreement, the quota level would be increased by 7 per cent of the preceding year's level. Handloom fabrics, hand-made cottage industry products of handloom and 'India-made' items (traditional Indian cottage industry products) would not be subject to quota restrictions.

Under the Agreement between India and Austria which would run for a period of four years from January 1974, there would be a quota for the export trade of cotton textiles in the first year to the tune of 728 tonnes, under the last agreement. The growth rate would be 6 per cent every year as provided under the GATT International Arrangement on textiles. The Agreement provides that handlooms would be outside quota restrictions.

INDIAN VELVET POPULAR ABROAD

Consistently rising export graph of Indian velvet amply indicates its growing popularity in international markets. The year 1973-74 witnessed a foreign exchange earning of the velvet at Rs. 27 million. In fact, the exports rose to this level from Rs. 19 million in 1972-73, Rs. 10.15 million in 1971-72 and Rs. 6.50 million in 1970-71.

Over 50 countries imported Indian velvet during 1973-74. Indonesia constituted the principal customer having imported worth Rs. 5.85 million. USA closely followed, having purchased at Rs. 5.60 million. Among other markets, Bangladesh imported at Rs. 3.12 million, Saudi Arabia at Rs. 3 million, Poland Rs. 1.13 million and Australia worth Rs. 1.12 million. Besides these, Yugoslavia, UK, Malaysia, Libya, Hong Kong, France, Bahrein Islands and Afghanistan were the other markets.

During 1972-73, about 50 countries had purchased Indian velvet. U.S.A. constituted the largest market at Rs. 6 million, followed by Nigeria, Poland, Indonesia, U.K., Singapore and Canada.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

INDIAN TELEPHONE INDUSTRY

New types of telephones are being designed in the Indian Telephone Industries Limited, Bangalore. The shapely models are expected to give a better performance than the conventional ornes. In one of the models, all the inner components are mounted on a printed circuit board which eliminates wiring within the telephone instrument. In addition, a new transmitter which reproduces the speech more faithfully and a long lasting dial will also be incorporated. Several parts in the new telephone will be made of moulded plastic material, facilitating fast mass production techniques.

Apart from this, a new telephone which puts out a more pleasing tone has been designed. A push button telephone where the conventional dial is replaced by a key pad, will also be coming shortly. This facilitates quick keying of long numbers. For the Defence Services, a versatile field telephone has been designed.

Special instruments like the automatic answering telephone, auto dialler loud-speaking telephone are also in the final stages of design. Answering telephones would be a boon to busy subcribers like doctors as they provide facilities for leaving a recorded message, when the telephone is unattended to. The recorded message is automatically transmitted back to the caller and any message from the caller can also be recorded. The auto dialler facilitates the automatic dialling of frequently used numbers.

The ITI engineers have made several changes in the Cross Bar System to suit the heavy calling rates in India. From 1973, the improved versions are being manufactured. Efforts are being continued to further improve the Cross Bar System which is essential for establishing STD calls.

At present, ITI is engaged in conducting advanced research in the field of microwave radio equipment. In the next few years, several cities in India will be connected by a wide-band microwave network.

ITI has also successfully evolved equipment which will handle 960 telephone conversations simultaneously. Such equipment has been installed between Poona and Secunderabed. The ITI Engineers are now involved in devising an equipment which will double this capacity to 1,800. This will be on per with the imported equipment with which some of the routes in India will be covered. Similarly, in the field of cable capacity, reseach is going on to introduce 2,700 channels in the coaxial cables as against 960 at present.

The ITI also supplies equipment which helps in the regulation of power distribution through remote control for the Railways and the Electricity Boards. Equipment for centralised traffic control in the Railways has also been supplied. A prototype for special transmission equipment for the satellite earth station at Dehra Dun has just been completed. A 50-line electronic exchange has also been designed and will be produced in Palghat shortly. These are some of the highlights of the aggressive research and devlopment programme launched by the ITI.

Except for some raw materials which are not yet manufactured in India, most of the components are indigenous. The import content in the total production is at present within 20 percent.

ITI, the first public sector undertaking set up after Independence (1947), is now constructing a string of new factories without any foreign collaboration

The Bangalore Unit has four Divisions. It manufactures automatic telephone exchanges of the Strowger type of about 1,50,000 lines and automatic exchanges of Cross Bar type of about 1,00,000 lines per year. In addition, about 2,50,000 telephone instruments and long distance transmission equipment of various types are made. They include equipment for providing large number of telephone and telegraph circuits over open wires, coaxial cables, microwave radio and for satellite communication. ITI has also been manufacturing a wide range of electronic measuring and testing instruments and equipment to meet the special needs of Railways, Defence and Electricity Boards.

During the Fourth Plan, ITI set up three more units entirely from its own know-how. The components factory at Srinagar went into production in 1971 and this year it is set to double its target, originally fixed. The transmission factory at Naini. (Allahabad) is also on full stream. The telephone instruments factory also at Naini, which went into production two years ahead of schedule is expected to manufacture 50,000 telephones this year. When the project is complete, it will reach the full production of 500,000 telephones a year. The fourth project at Rae Bareli, U. P., for making Switching equipment is set to produce 100,000 Strowger exchange lines, pending the selection of an ideal Switching system. Its capacity is 300,000 lines of exchange equipment and it is expected to be in full production in four years time. The fifth unit, coming up at Palghat, (Kerala) for the manufacture of small electronic telephone exchanges is expected to start production by next year.

Demand for telephone equipment and accessories is repidly going up in recent years. According to the Pathak Committee, there will be a shortfall of equipment even against the lower demand forecast by it. In the case of switching equipment, the shortfall will be about 1.90 milion lines in the next ten years, even after accounting for the approved new projects and taking exports only at five per cent of the sales. In the case of telephone instruments, the shortfall will be again about 1.90 million numbers, while transmission equipment worth Rs. 240 million would still be needed. Hence the ITI has proposed six more factories which include two transmission factories, one switching factory, one telephone instruments factory, one factory for digital and control equipment and another for testing and measuring instruments.

In the preceding four years, ITI's production has been increasing at an average rate of 20 per cent every year. ITI has achieved increase in the productivity, operative efficiency and optimum use of capacity.

A strict quality control marks ITI's production at every stage. As any rejections will cut into the profits, the maintenance of profitability is an index of its quality. To give an example, an automatic dialling device operates the dial for 200,000 times.

ITI products have proved their competitiveness and reliability in the world markets. They have been well received in 40 countries, including U. K. and Australia, and earned Rs. 50 million. They have orders on hand worth Rs. 15 million and they have for the first time quoted against ITT, the parent company for the know-how and hope to win the order from a South American country for supply of Cross Bar equipment. Again, when the P & T Department calls for global tenders for supplementary equipment, they fined that the ITI quotation is the lowest and the best. It is less than the FOB prices of imported goods. Recently, ITI won an order against global competition for installing microwave system for the U. P. Electricity Board. The price of every item is based on 90 per cent ideal efficiency, which is a very high standard in India.

An important problem facing India today is the availability of spare parts for maintaining the exchanges. From 1973, the policy has been changed to produce more spare parts. In the last year, ITI supplied over Rs. 20 million worth of spare parts. This would cease to be a problem by the end of this year.

ON RUBBER PLANTATIONS

Rubber plantation industry occupies an important position in Indian economy as it provides the principal raw material required for the manufacture of a wide range of rubber products that are indispensable for the agricultural, industrial and defence sectors. Since independence the industry registered substantial progress, both in terms of area under plantation and production. The area under rubber was only about 63,000 hectares in 1947 which gradually grew to about 212,100 hectares by 1972-73. The production rose from over 71,000 tonnes in 1968-69 to 125,150 tonnes in 1973-74. By the end of 1973-74, the number of rubber growers in India was 125,024 and the total area under rubber was 217,540 hectares. Of the total number of growers 95 per cent is accounted for by small holders owning 4 hectares and below in rubber area.

Of the total area under rubber (217,540 hectares), as by the end of March 1974, 17,145 hectares were under the control of the country's public sector. The plantations in the public sector are distributed mainly among three Southern States, namely, Kerala, Karnataka and Tamil Nadu in that order.

When the Fourth Five-Year Plan was formulated, it was initially anticipated that the demand for natural and synthetic rubber by 1972-73 would increase to 200,000 tonnes but as the actual consumption fell short of the anticipated demand, there was accumulation of stocks. To remove the glut in the market, the State Trading Corporation of India (STC) entered the rubber sector in October 1970. To supplement the efforts of the STC, the Kerala State Cooperative Marketing Federation also entered the rubber market. In May 1973, the Government of India directed the STC to export 5000 tonnes of natural rubber against which 3050 tonnes were exported during the period August 1973 to May 1974, fetching nearly Rs. 18 million.

The country's rubber requirement is expected to steadily increase in the coming years. As rubber tree takes about seven years to yield, long term planning is being resorted to step up its production by way of improving the productivity of existing plantations and re-planting low-yield areas with high-yield varieties. It is expected that dependence on synthetic rubber will be minimised gradually and import of this strategic commodity done away with.

LARGE RESERVES OF MINERAL ORES IN KARNATAKA

About 47 sq. miles with an estimated 100 million tonnes of iron ore and 10 million tonnes of manganese ore would get submerged under the reservoir, once a dam across the Kalinadi river near Supa in North Canara district of Karnatka (Mysore) is constructed within the next four to five years. The Karnataka State Government has estimated a quantity of 75 million tonnes of iron ore reserves in the leased out area to private parties and rest in the reserved area set apart for public sector exploitation. The grade of the ore generally ranges from 58 to 63 per cent of iron content. The construction of the dam for the purpose of power generation has added urgency to the extraction of the mineral ores in the submersion zone and the problems including geological mapping and investigation, structural arrrangements for accelerated mining development of infrastructure and roads and economies of marketing are under study. The Minerals and Metals Trading Corporation of India will be charged with the responsibility of off-taking the ore for export purposes. The work relating to the quick exploitation of the submersion area has been entrusted to M/s. Mysore Minerals Ltd., an undertaking of the Government of Karnataka.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

DC TRACTION RECTIFIER COMMISSIONED AT KARLA

Bharat Heavy Electricals Ltd. (BHEL) at Bhopal, a public sector unit, has recently commissioned its fifth DC Traction Rectifier sub-station at Karla about 10 kms. from Lonavala on Bombay-Poona road.

This new sub-station at Karla will add a total of 21,000 KW of electric power to the Central Railways. The other four sub-stations already commissioned by BHEL are Badlapur, Talegaon, Chinchavali on Kalyan-Poona line and Titvala on Kalyan-Igatpuri line of the Central Railways. The sixth sub-station at Chinchwad is expected to be commissioned by BHEL shortly.

BHEL has also undertaken the setting up on turnkey basis of four more DC traction rectifier sub-stations on the Central Railways with indigenous know-how and equipment. The contract includes supply, erection, testing and commissioning of the sub-stations.

These sub-stations will pump additional 42,000 KW of electric power which will be utilised for running electric locomotives for haulage of passenger and goods traffic. With this additional power, the haulage capacity will also increase considerably. These sub-stations are remote - controlled and are being equipped by the most modern and highly sophisticated equipment.

STRATA MOVEMENT ALARM DEVELOPED

The Central Mining Research Station, Dhanbad has developed a device "Strata Movement Alarm" which may be used as convergence, yield and roof-sag alarm. It indicates impending roof fall in mines in advance and would be of much help in reducing accidents from fall of roof.

The device remains the same in all the three forms but the method of fixing varies. In "Convergence Alarm", the device is attached to extension pieces and is fixed vertically in between roof and floor. When used as an "Yield Alarm", it is fitted with yielding props with the help of special type of clamps. The device when fitted with a sag bolt works as a "Roof Sag Alarm". It operates on the principle of sharp increase in strata movement (convergence, prop-yield, roof sag) before a roof fall. On the basis of some initial studies for a couple of weeks or so, it is possible to set the instrument to a particular limit of Convergence, roof sag or prop yield. An electrical circuit gets completed when the limit is exceeded and a visual and an audible signal is emitted, The instantaneous reading through a dial gauge provides for additional factor of safety. The device may be used for prediction of on coming, periodic weight at longwall faces, impending main fall in depillaring districts, and, failure of roadway and junctions. The stability of a particular area of a mine may also be evaluated with the help of this instrument.

PAPER FROM JUTE STICKS

The Forest Research Institute, Dehradun in Uttar Pradesh has developed a process for producing paper from jute sticks,

The present production of paper in the country is about 0.8 million tonnes. With the increase in the tempo of industrialisation, the demand of paper, pulp and board is expected to increase. It is estimated that the demand will be 1.10 million tonnes by the Fifth Plan.

The two major raw materials used uptil now have been bamboo and sabai grass. Bagasse is also being used for paper manufacture by some mills. Other promising raw materials are hardwoods, jute sticks and straw.

The problem of shortage of cellulosic material for pulp, paper and board have drawn the attention of the scientists in India to find out other suitable raw materials. Efforts have been made to utilise jute stick as a raw material which is available in plenty in the states of West Bengal, Assam, Tripura, Orissa, Bihar and Uttar Pradesh. At present, a considerable quantity of jute sticks is allowed to rot or waste away.

The new process developed by the Institute is a simple semi-chemical processs which has been named as 'hot caustic soda process'. The process is particularly suitable for pulping agricultural residues, such as, jute sticks, bagasse, straws, grasses etc., but it is also applicable for bamboos and woods.

The new process provides a quick, simple, practical and economical method of obtaining high yield pulp. It is a two stage process. In the first stage, the raw materials in the form of chips, is boiled with the solution of caustic soda at boiling temperature for a short period. The quantity of caustic soda is varied depending upon the raw materials and the grade of pulp desired. After the period of caustic treatment, the spent liquor is withdrawn and so treated chips are washed with water to minimise possible alkali contents. In the second stage of process' the chips treated as above, which are now sufficiently soft, are mechanically fiberised into pulp. The pulp is then washed with water and made into paper after further beating.

The process has been studied on a pilot scale of 6 tonnes per day capacity.

Raw materials required in the process include jute sticks, caustic soda, lime stone, chlorine, alum, rosin, fillers, dyes and acid. All are available in the country.

Normal pulp and paper marking machines are the equipment required in this process.

DIRECTION PATTERN OF INDIA'S IMPORT TRADE

(Rs. in Million)

Region	1972-73	1973-74
Africa	1650.55	1672.55
Zambia	284.00	344.60
Tanzania Republic	279.50	289.75
Arab Republic of Egypt	288.70	259.00
Sudan	458.00	219.30
Kenya	63.20	174.20
North America	**9424.80**	**6088.30**
USA	2348.75	4934.00
Canada	1076.00	1154.20
Latin America	**232.40**	**538.25**
Argentina	180.30	404.70
Brazil	12.15	108,80
ECAFE Countries	**4006.45**	**6687.70**
Japan	1785.35	2555.70
Iran	1219.80	2675.75
Australia	335.55	436.60
Malaysia	84.15	320.90
Bangladesh	168.85	34.60
Afghanistan	160.30	150.95
Nepal	95.00	129.90
Other Asian and Oceanian Countries	**842.90**	**2813.60**
Iraq	66.00	612.40
Kuwait	255.15	711.25
Saudi Arabia	1313.55	448.35
Jordan	89.15	43.10
Bahrein Islands	3.65	69.35
East European Countries	**2310.75**	**3927.80**
USSR	1143.75	2497.50
Poland	362.45	457.55
Czechoslovakia	159.00	265.35
German Democratic Republic	191.60	248.30
Rumania	135.50	134.40
Bulgaria	95.40	138.00
Hungary	149.15	108.15
Yugoslavia	73.80	78.50
European Common Market Countries	**5764.20**	**6831.80**
United Kingdom	2372.45	2448.10
Federal Republic of Germany	1725.85	1957.35
France	398.45	697.60
Belgium	510.40	655.25
Netherlands	366 85	543.20
Italy	359.40	490.80
EFTA Countries	**387.00**	**521.00**
Grand Total	**18,674.40**	**29,209.00**

INDIA'S ENGINEERING EXPORTS

A PERSPECTIVE

The recent oil crisis combined with an inadequate production and sharp rise in import bill has resulted in a wide gap between the foreign exchange earning and expenditure of the Indian economy. The country's exports have, no doubt, shown a marked improvement in recent years. Partly, this increase was on account of higher unit realisation despite which there has not been a relative quantitative increase. India's share in world exports has, in fact, registered a decline from 1.18 per cent in 1960 to 0.64 per cent in 1972 and 0.49 per cent in 1973. Another important feature of India's foreign trade pattern has been that whereas bulk of the exports are accounted for by traditional agricultural produce - jute manufactures, tea and coffee, leather and manufactures, iron ore and other minerals, cotton fabrics in that order - the major import requirement, apart from such essentials as foodgrains and fertilizers is that of capital goods and machinery including electrical machinery and transport equipment, steel and non-ferrous metals. While such a situation in the years following independence was unavoidable, with so much of subsequent investment and development of infra-structure and industrial base in the country, a continuance of this pattern of trade would be untenable.

An examination of the trade pattern of the developed countries would indicate that a major part of their exports is of finished and capital goods, with high value added, their imports mainly constituting raw materials. With the progress that has already been made towards industrialisation and towards fostering heavy industries as well as setting up of industrial infrastructure, the engineering sector in India, particularly, the heavy engineering industry, has to make a bigger contribution to the economy's export earnings. This is the conclusion of the Committee on Engineering Exports appointed by the Government of India to consider the problems and prospects of the engineering industry relating to export trade.

So far, the principal exports of engineering goods from India have been those of consumable durables - bicycles and components, fans and sewing machines and other simple items and such items where value added is rather marginal, such as, pipes and tubes and bright bars. No doubt, some progress has been achieved in the export of engineering equipment such as for textile, sugar, cement and other industries but sufficient dent has not been made in the foreign markets in relation to the economy's capability. In 1973-74, for instance, the total exports of engineering products stood at Rs. 1801 million. Of this, the contribution of iron and steel manufactures (agricultural implements, cast iron products, hand and small cutting tools, steel pipes, wire products and so on) was Rs 580 million. Transport equipment, namely, buses, auto rickshaws, forklift trucks, bicycles and railway wagons contributed Rs 420 million. Electrical apparatus and appliances such as batteries. electrical circuit breakers, fans, electric motors and aluminium conductors contributed Rs 304 million. Non-electrical machinery, namely, diesel engines, air compressors, foundry machinery, machine tools, textiles and jute mill machinery, sugar machinery etc. secured Rs 277 million. Miscellaneous Manufactured items like cameras, fire arms, fountain pens and mathematical instruments netted Rs 74 million. Manufactures of non - ferrous metals contributed Rs 91 million and manufactures of all metals (such as builders' hardware and electrodes) secured Rs 55 million. The Committee on Engineering Exports, while taking into account the current value of output of engineering goods and corresponding exports felt that the value of engineering exports for 1978-79, the terminal year of the Fifth Five Year Plan, be postulated at about Rs 6,000 million.

The Indian economy has, by now, considerably diversified its industrial production, producing heavy capital equipment, such as, for steel plants, fertilizers, and foundries, large thermal and hydro - generating sets at the one end of the spectrum to items like refractories, sewing machines, airconditioners, fans, other household electrical appliances and handtools at the other end. The economy has also accumulated a good measure of experience and expertise in engineering consultancy and in civil construction. This should enable the country to meet a fairly wide range of requirement of other countries. It has been increasingly apparent that the preference of the developed countries would continue in favour of trade and exchange of technology with each other. The developed countries would prefer to confine their imports from the developing countries to the agricultural produce and unprocessed raw materials, unless there are compelling reasons to do otherwise. Due to progressive industrialisation and exploitation of material resources by the developing countries and change in the ownership of mineral resources, there is a greater complementarity of the economies of the developing countries today than earlier. Followed by the oil price hike, the developed countries are also experiencing serious inflationary pressures and as a result are seriously considering to vacate certain areas of manufacture, such as, components and sub-assemblies. On the other hand, developing countries like India have the advantage of lower wages or the availablity of raw materials and hence could use the opportunity to establish production of such components for exports. These are the considerations that the Committee on Engineering Exports had while chalking out a broad strategy for engineering exports in the future.

No export strategy can, however, succeed unless production over and above the minimum domestic requirements is attained. This objective led the Committee to believe that a greater emphasis than heretofore would be needed to be laid on increasing production with a minimum investment and in the quickest prossible time. Also a greater emphasis would be necessary on regional and bilateral economic cooperation and on evolving a common approach by the developing countries to the export of their primary and mineral produce. Further, there would have to be greater effort to switch from export of primary and unprocessed goods to more processed goods and capital equipment. Every export order must be executed to the full statisfaction of the foreign customer and to enable this necessary inputs of raw materials be made available to the exporter on priority basis, particularly steel. The Committee has also felt that the public sector units in India can play a very effective role in increasing export of engineering equipment, consultancy, turnkey jobs and construction on the basis of pooling of their resources. A beginning has already been made by public sector units like Hindustan Machine Tools, Bharat Heavy Electricals, Triveni Structurals Limited, Engineering Products of India and others. It has been estimated that exports from the public sector units would be possible to the extent of Rs. 850 million in 1974-75. It should be possible to export more cranes, diesel engines, road rollers, FRP boats, dredgers and trucks and many other items produced by the public sector units.

The Committee also touched upon various other aspects of the long-term export strategy of engineering goods such as quality control and preshipment inspection, export obligations and incentives, raw material availablity, role of small scale industries, industrial licensing and foreign collaboration policies and so on.

Referring to the programme of export of engineering goods during the Fifth Five Year Plan period the Committee felt that due consideration would have to be given to regionowise exports, such as, to the developing countries, oil producing countries and developed countries. India enjoys considerable goodwill with most of the countries, particularly in South East Asia and the oil producing countries. There is considerable scope, according to the Committee, to participate in the projects financed by Asian Development Bank leading to the export of India's equipment and consultancy. Indian technology and exprience is paritculary relevant to some of the developing countries in Africa. Also there is very good response from the oil producing countries towords closer economic cooperation with India. These countries where money is no constraint are anxious to accelerate their development and are highly selective with regard to the choice of technology and equipment. India can participate both directly as well as indirectly through reputed companies of developed countries. As far as the developed countries are concerned, there has been a tendency, particularly in view of spiraling prices and shortage of technical manpower to vacate some of the areas of manufacture of components and sub-assemblies. Here again, India can advantageously enter these areas and share consultancy work and detailing of engineering with the developed countries. Recently, a trade fair was organised in Paris to facilitate such sub-contracting to the developing countries and India's participation in the Fair was rewarding. It was noted that some of the reputed automobile manufacturers were interested in off-loading certain components on long term basis in

India. In certain cases, it might need a wholesale transfer of technology/machinery for India based units to meet their requirements. These are not isolated instances but are definite trends that must be made use of to the best of India's advantage.

Amongst the areas that have been identified with the help of National Industrial Development Corporation (NIDC) as having potential for development of our exports to, or with the help of, these developed countries are : consultancy services as joint efforts, particularly in the Middle East, East Africa and South East Asia; contract Engineering Services as in the case of consultancy service; construction work either as joint effort or as sub-contractors to European firms, essentially in third countries; equipment manufacture for supplies to countries closer to India as also to Europe; spare parts manufacture for supply against equipment no longar in regular production in the developed countries; manufacture of auxiliary products such as jigs, fixtures, dies and patterns to meet the European needs; manufacture of components for use in completion of production programme in European plants wherever such production in India would be found to be economically more advantageous; transfer of production to India of such assemblies and/or sub-assemblies as involve relatively larger manpower inputs and establishment of new facilities in India to meet the growing demand of European industry for their own needs also for export to third countries.

An exercise to identify the engineering items with better prospects of exports to U.S.S.R and East European countries has been carried out recently and includes items like automobile ancillaries including fuel injection, bicycle components, dry and storage batteries; garage equiment; handtools and small tools, industrial instruments and control, industrial fasteners, iron and steel castings and ferrous forgings, machine tools and accessories, petrol pumps, power cables with aluminium conductors, railway coaches and wagons, sophisticated machine tools including machine tool accessories, jigs, tools and fixtures and sugar mill machine components. The Committee on Engineering Exports has felt that in the next two or three years, Indian exports, particularly of heavy engineering equipment could be built up without any substantial investment or addition of new capacity. This could be largely achieved through better utilisation of capacity, diversification and through marginal addition of balancing equipment.

Referring to the scope for increased exports of consultancy, the Committee has felt that India has already developed a strong base of design and engineering capability through organisations such as MECON (Mechanical Engineering Consultancy Ltd.), Dastur & Co., Indian Railways, Department of Atomic Energy, NIDC, Fertilizer Corporation and Oil and Natural Gas Commission. Complete engineering consultancy services that could be rendered abroad by India at this stage should be essentially limited to those areas where proven production/processed technoloy is available in the economy. An illustrative list of the fields in the complete consultancy engineering which can be offered by India includes architecture town planning, cement, construction engineering, cotton textiles, dam engineering, electric furnace steel plants (mini steel plants), grey iron foundries, leather industry, light engineering industries including consumer durables (bicycles, sewing machines, fasteners, fans and switches), mining including ore handling and dressing, oil extraction and processing, power engineering, power transmission and distribution, railways, construction, re-rolling mills, roads and highways, steel foundries, structural fabrication, sugar production based on sugarcane and water supply and sewage disposal. Apart from the specific fields mentioned above, there are areas of general consultancy like economic consultancy services (region area development studies; market surveys, development of economic plants, inter-relations with resources), management consultancy services (manpower planning, computerisation, material management, work study, operation research, modernisation studies) and management services for construction and operation, such as, programming, scheduling and progressing of individual items of work, supervision and inspection of construction, erection, equipment supplies and commissioning.

As regards the scope for export of turnkey projects (including production of technology, consultancy services, manufacture procurement and supply of equipment, construction management and commissioning services), joint ventures and civil construction, the

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Committee on Engineering Exports has opined that this field has subtantial future in the context of India's engineering export trade. In some of the traditional industries of engineering sector, India has attained a good amount of experience that could be suited to most of the developing countries. It has been possible for the Indian industry to undertake turnkey projects abroad for asbestos cement production, bicycles, cement, sugar and steel machinery, cotton and woollen textiles, domestic sewing machines, electric fans, hardboard, HT power transmission lines including sub-stations, jute, light and medium structural fabrications, paper and pulp, pipelines for gas and petroleum and sugar. As the know-how and manufacturing base of the Indian economy get more developed and diversified, it should be possible for her to take up turnkey projects in other sectors also.

During the past few years, India has acquired a certain degree of competence to participate in programmes of industrial development in the developing and other countries. For instance, India has assisted in setting textile mills in Ethiopia, Kenya, Nigeria and Malaysia; woollen textile mills in Ethiopia and Kenya; paper and pulp project in Kenya; mosaic tiles and rolling shutters, cement and woollen textiles in Mauritius; solvent extraction plant in Nigeria, sugar mill in Uganda; electric motors, pumps, diesel engines and steel foundry in Malaysia, diesel engines in Philippines and asbestos cement board in United Kingdom. There are still many areas where a greater effort for setting up joint ventures abroad could be successful. Indian investment in joint venture projects is, however, small, being of the order of about only Rs. 250 million.

The Committee on Engineering Exports has thus concluded that a large export potential is awaited by India's engineering industry, both in term of physical and know-how supplies, keeping in view the trends in domestic production and international demand. To be able to take advantage of this potential, the Committee has delineated several steps for removing the constraints, both on the demand and supply fronts. ☐

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RARE EARTHS TO WORLD MARKETS

One of the world's largest exporters of rare earths, M/s. Indian Rare Earths Limited (111, Maharshi Karve Road, Bombay-20) caters to about one-third of the world requirements in the line. In addition to rare earth products, the firm also exports large quantities of ilmenite and smaller quantities of zircon, rutile, garnet and sillimanite. It also supplies thorium nitrate to the entire gas mantle industry in India and exports the chemical to Europe and Asian markets.

The firm, a central Government Undertaking under the control of the Department of Atomic Energy, has won the first award for the best export performance under the group "Basic Inorganic and Organic Chemicals" for the year 1972-73, instituted by the Basic Chemicals, Pharmaceuticals, Cosmetics and Soaps Export Promotion Council, Bombay.

During 1972-73, the company exported its products worth Rs. 17 million which represented about 50 per cent of its total production. This performace was further improved upon during 1973-74 when the export trade of the company touched an all time high figure of Rs. 31 million, an 80 per cent increase over the previous year's figure.

The company experienced initial difficulties to export its rare earth products due to stiff competition from established producers in the industrially advanced countries but by its strict adherence to quality and delivery schedules, it created an export market in excess of its plant capacity. The rare earths plant of the company at Alwaye in Kerala has at present a capacity to treat 4500 tonnes of monazite per year. The expansion plans of the company were carried out without any foreign assistance.

Before India attained Independence, monazite, a strategic mineral containing uranium and thorium was being freely exported. Soon after the Atomic Energy Commission was formed, (1948), export of this mineral was banned when it was decided to process it in India to recover the thorium values and export rare products.

As a part of its diversification programme, the company has set up a plant for producing rare earths fluoride, rare earths oxide and pure cerium oxide. It has also developed skills for the production of pure rare earths.

The thorium plant at Trombay near Bombay, being operated by M/s. Indian Rare Earths Limited, treats crude thorium hydrochloride produced in the Rare Earths Division of the company at Alwaye. One of the largest in the world in the production of thorium nitrate, the firm not only meets the full demand of indigenous market, but also caters to overseas markets in Asia and elsewhere. It is capable of producing rare grade thorium oxide and other thorium compounds.

The Thorium factory was awarded the first prize in 1967 by the Council of Industrial Safety, Bombay for the highest percentage of improvement in the frequency rate of accidents in establishments working for one million man-hours per year.

BIG EXPORT ORDER FOR INDIAN CYCLES

In tune with the growing popularity of Indian cycles in foreign markets, one of the manufacturers in the line, M/s. Hind Cycles Ltd. (Birlagram-Nagda), have succeeded in securing export orders for 19,000 cycles. The orders on hand relate to supply of 10,000 cycles to U.K., 5,000 to Iran, 2,000 each to Nigeria and Sudan and 300 to Dubai.

The Company expects fresh orders from Iran for 10,000 cycles as also for a sizeable quantity from Bulgaria and Czechoslovakia. Export orders with the firm are expected to soon cross a figure of 30,000 cycles at a value of Rs. 6.60 million.

The current montly production of the firm is placed at 22,000 cycles on two-shift basis.

Indian exports of bicycles and other cycles totalled Rs. 26.74 million in 1973-74. Quantitatively, 172, 352 bicycles and other cycles were exported during the year. Iran, Nigeria and U.S.A. were the leading buyers.

Besides foreign exchange realisation through overseas sales of complete cycles, bicycle parts contributed as much as Rs. 119.26 to the export earning during the year. The main items exported in this group in the year included free wheels (Rs 10.37 million), bicycle chains (Rs. 9.70 million), rims (Rs. 3.25 million), spokes (Rs. 4.64 million), saddles (Rs. 1.44 million), hubs (Rs. 2 million) and other parts (Rs. 88 million).

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The present licensed capacity for complete bicycles, spread over among 14 units, is placed at about 3.73 million numbers. Actual production rose to 2.6 million numbers in 1973-74 from 1.80 million numbers in the preceding year. The organised sector of the industry accounts for about 80 per cent of the total bicycle production. Additionally, the small scale sector has over 300 units engaged in the assembly of bicycles and manufacturing bicycle parts and accessories. The capacity for complete bicycles in the small scale sector is 0.50 million numbers while the current production level is placed at 0.40 million numbers.

In regard to bicycle ancillaries and parts, the production in terms of value was Rs. 150 million in 1973 as against Rs. 142 million in the preceding year. A comprehensive range of products, such as, bicycle chains, free-wheels, hubs, spokes, nipples, rims, mudguards, saddles and chain wheels are manufactured by the industry.

EXPORT SUCCESS IN TELEPHONE EQUIPMENT

M/s. Indian Telephone Industries Ltd. (ITI), (Dooravani Nagar, Bangalore-16), a public sector undertaking engaged in the manufacture of telepbone equipment and parts, has recently secured an order of a value of Rs. 12 million from Surinam in South America for supply of telephone equipment. Within India itself, ITI recently won an order against global competition for installing microwave system for the U.P. Electricity Board.

The telephones, equipment and parts made by ITI are supplied to more than 40 countries of the world. Testifying to their competitiveness and reliability, the export destinations include even countries like U.K. Australia, New Zealand and Brazil, besides neighbouring countries in Asia and Africa. They entered the export field with a modest beginning in 1962-63 and their cumulative exports so far amount to Rs. 50 million. ITI's export value of telephone apparatus and equipment, including telephone and telegraph equipment and parts was Rs. 4.10 million in 1972-73 and only Rs. 3 million in 1971-72.

The major areas of equipment manufactured by ITI relate to automatic exchange equipment, telephone instruments, transmission equipment and equipment for satellite communication system. The total annual capacity is of the order of 2,50,000 lines in respect of exchange equipment. This includes 1,50,000 lines of strowger type and 1,00,000 lines of crossbar type. The transmission equipment manufactured by the company include equipment for providing large number of telephones and telegraphy circuits over open wires, coaxial cables and microwave radio.

ITI's production of telephone instruments at Bangalore is of the order of 2,50,000 numbers. The unit is working on designing a number of newer models. For instance, in one of the models all the inner components are mounted on a printed circuit board eliminating wiring within the telephone instrument. Another model, recently designed, has the advantage of a more pleasing tone. A push button model where the conventional dial is replaced by a key pad is also in the offing. Special instsuments like the automatic answering telephone, autodiallers and loud-speaking telephone are also in the final stages of design.

Creditably, most of the components required by ITI are indigenous. In fact, the import content in the total production is currently within 20 per cent. It is also constructing a number of new factories without any foreign collaboration. It has already set up three units. Of these, the components factory at Srinagar went into production in 1971 and this year it is set to double its original production target. The other two units include the transmissjon factory and the telephone instrument factory, both at Naini, near Allahabad. The total production capacity of the Naini telephone factory is 5,00,000 instruments, though the production during the current year is to be of the order of 50,000 telephones. In addition to these units, a fourth project for making switching equipment is now set to produce about 1,00,000 strow-ger exchange lines. A fifth unit coming up at Palghat (Kerala) for the manufacture of small electronic telephone exchanges is likely to go on production stream by the next year.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT POSITION OF COTTON TEXTILES

Having attained a level of Rs. 2378 million during 1973-74, India's export trade in cotton textiles continues to be brisk. For the first half of 1974-75 (April-September, 1974) the export value totalled Rs. 1346 million against the earning of Rs. 990 million in the same period of 1973-74. These exports have been increasing year after year as will be evident from the fact that these were valued at Rs. 1151 million in 1971-72, Rs. 1583 million in 1972-73 and Rs. 2378 million in 1973-74.

In 1973-74, the contribution of cotton piecegoods in the export trade amounted to Rs. 1538 million while the export of yarn totalled Rs. 104 million, apparel Rs. 404 million, hosiery Rs. 18 million and others Rs. 313.7 million. In the first half of 1974-75 piecegoods secured Rs. 710 million, yarn Rs. 71 million, apparel Rs. 326.5 million, hosiery Rs. 18.5 million and others Rs. 221 million.

In terms of quantity, export of piecegoods amounted to 389 million sq. metres in 1971, about 431 million sq. metres in 1972, nearly 631 million sq. metres in 1973, and approximately 350 million sq. metres during January-September 1974. Cotton yarn exports stood at 12.4 million kgs. in 1971, 22.2 million kgs. in 1972, 11.9 million kgs. in 1973 and 7.6 million kgs. during January-September 1974.

No doubt, there was a declining trend in the latest export trade. The bulk of exports that took place upto September, 1974 was against contracts entered into earlier with the international markets when they were active. Following the damage of U.S. cotton in floods during late 1972, the international cotton prices shot up in 1973 and thus they proved to be in favour of India. In the current year, U.S.A. has had a record crop and this has caused sizeable reduction in the international prices. Also domestic prices of cotton textiles have risen. The gap between the international and domestic prices, the reduced buying trend due to heavy stocks and anti-inflationary measures taken by various importing countries have adversly affected Indian exports of the textiles. To impart competitiveness to exports in international market, a combined obligation scheme for production of controlled cloth and export has been introduced effective from October 1974. The scheme provides for an indirect incentive by way of set off of 1 sq. metre of controlled cloth for production against exports of every Rs. 5 worth of mill-made cotton piecegoods and made-ups and Rs. 7.5 worth of mill made cotton garments. Some imports of medium staple cotton are also being arranged exclusively for export production, so that adverse price differential between the domestic and world cotton prices is neutralised. With the introduction of this scheme and certain other measures contemplated by the cotton textile industry in India to meet the differential between India's textile export prices and world prices, the encouraging export trend witnessed by the textile industry in India is definite to be sustained in future.

INDO-JAPANESE AGREEMENT ON IRON ORE PRICES

Pursuant to the negotiations that the Government of India had with Japanese steel mills for upward revision in prices for supply of iron ore under yearly and long term contracts, an increase of 34 per cent to about 40 per cent has been secured for the supply of basic grade and super high grade iron ore to that country. Due to rising procurement costs on account of the unprecedented price hike in oil prices, the upward revision in the prices became inevitable.

The Minerals and Metals Trading Corporation of India (MMTC) had entered into a long term contract with the Japanese Steel Mills in April 1970 for the export of Bailadila iron ore. The contract provided for export of 61.26 million tonnes of iron ore valued at Rs. 4670 million to be supplied over a period of nine years. It included a provision for a parity clause in the international currency fluctuations and under this clause MMTC secured increases in the prices, following two dollar devaluations in December 1971 and February 1973. In February this year, MMTC requested the Japanese buyers for an upward revision of the iron ore prices in respect of all contracts including the Bailadila long term contract. The Japanese steel mills agreed to increase the prices by US $ 2.25 per dry long ton effective from September 1, 1974, till the expiry of the contract.

MMTC has thus succeeded in securing the above increases and was also to get an assurance from the Japanese buyers that if during the remaining period of the long term Bailadila iron ore contract there occures a change in the economic situation resulting in rise of prices of iron ore, they would agree to discuss the question of further revision of prices.

TRADE AND ECONOMIC COLLABORATION WITH PHILIPPINES

India's export trade with Philippines during 1973-74 totalled Rs. 34.30 million as compared to nearly Rs. 15 in the preceding year. Major items of supply were shellac, metal manufactures, machinery, transport equipment and rubber manufactures. Indian imports from that country were of the order of Rs. 4.60 million in 1973-74 and Rs. 2.80 million in the year before.

More important than commodity exchange, the aspect of economic collaboration has been prominent in India's relationship with Philippines. The major areas of technical collaboration between the two countries are power transmission and railways. Recent awards of a contract worth Rs. 73 million to M/s. Tatas of India to install transmission towers in Mindanao Islands and another contract worth Rs. 27.60 million for 30 rail coaches from Projects Epuipment Corporation of India are idicative of the prospects of collaboration between India and the Philippines.

Philippines has evinced keen desire to import Indian railway technology. In 1970, India's railway industry proved to the Philippines the merit of its technology in rehabilitating their railway network. In the wake of this initial success was received an order for 30 railway coaches for which a credit line was established. The coaches are to be supplied in 18 months from March 1974 and are to be paid for in nine years at 6.25 per cent interest. The Philippines also approached India for 200 kilometres of rail tracks. In succession, came the recent request for 30 rail cars. An Indian firm is now busy welding 30 km. of rails and further orders are in the pipeline.

Philippines also approached India's sugar mill industry to design and establish field-to-factory lines with shunters. India's assistance was also sought by the Philippines to develop the communication system of that country. A feasibility report has already been submitted by an Indian transportation economist to the Government of Philippines on the transportation need of Mindanao Islands.

M/s. Hindustan Machine Tools, the premier machine tool manufacturer in India's public sector are already engaged in producing four varieties of tools in Philippines. The recent award secured by M/s. Tatas for nine million dollar worth transmission towers is stated to be the highest ever single order in South East Asia, under a project to be financed internationally by the Asian Development Bank. Another Indian firm has sold insulators for rural electrification worth over Rs. 8 million.

Joint industrial ventures between India and Philippines have already proved their merit in establishing closer economic links between the two economies. M/s. Kirloskars of Poona are to manufacture 3000 diesel irrigation pumps in the current year. Another Indian firm is appointed a local agent to market its communication equipment. A credit worth Rs. 50 million has been established to supply textile machinery to the Philippine market from India. Authorisation has been received by another leading firm in India to set up a spinning plant. Some more joint venture proposals are under way for the manufacture of refractories and rayon fibre as also to set up an oil extraction plant, two coconut oil mills and a plant for drilling bits.

The National Research Development Corporation of India (NRDC) has made a beginning in the context of technology transfer to Philippines. A Philippine firm was helped in erection of a plant bought from Japan.

Notwithstanding the limitations, such as, the lack of a direct shipping service and stiff competition from advanced economies like Japan and USA, Indian industry has indeed made its economic presence felt in the Philippines and the success of the collaboration projects undertaken by India so far clearly indicates the vast potential ahead.

TOWARDS STABILISATION OF WORLD PRICES OF PLANTATION GRADE CROPS

While the Government of India has no scheme to regulate the domestic prices of the major plantation crops, namely, tea, coffee and cardamom (with the exception of rubber for which minimum price in various grades of natural rubber have been fixed), there have been several moves towards stabilisation of the prices of these plantation crops in the world markets. Tea, for instance, is an item for the price stabilisation in the world markets of which India has been taking initiatives in bringing about a price discipline among the major tea exporting countries under the aegis of the Food and Agriculture Organisation (FAO). The sub-group of tea exporters of FAO which met in June 1974 concluded that it was vital for the survival of the tea industry that effective measures were taken to maintain the real price of tea. It was agreed in the meeting to examine in depth a multidimensional approach including the minimum export price arrangement, co-ordination and regulation of marketing, global promotion, the strengthening of auctions in producing countries and provisions for a market intelligence service. The inter-Governmental group on tea has so far been active on pricing policy mainly. For the first time, it was resolved that efforts should also be made for increased access to the developed markets and for removal of non-tariff barriers. Details of these measures are to be chalked out by a working party of important tea exporting nations. The tea prices which were stagnant in the last decade have started rising both in the domestic and international market.

As regards coffee, India is a signatory to the International Coffee Agreement and is a member of the International Coffee Organisation. The Agreement aims at achieving a balancing of supply and demand of coffee and stabilising its price in the world market. This Agreement was concluded in 1962, with the objective of achieving a reasonable balance between supply and demand on a basis that will assure adequate supplies of coffee to consumers and markets to coffee producers at equitable prices and to bring about a long-term equilibrium between production and consumption. This objective was sought to be attained through a system of export quotas that would ensure adequate supplies at remunerative prices. The Agreement was valid for a period of five years initially. Thereafter, a fresh agreement was entered into for another period of five years upto September 1973. It was then continued for a period of two years i.e. up to September 1975 without any quota for economic controls. At the last meeting of the International Coffee Council held in September 1974, it was decided to extend the terms of the Agreement till September 1976 without quotas and in the meantime to negotiate for a new agreement. It was also decided to have a 20 per cent retention scheme by which process the producers planned to push up prices of coffee in the course of next few months. This retention scheme has been agreed upon by India which would help in getting better prices for India's coffee in foreign markets.

India is also a major producer and exporter of cardamom in the world. Gautemala, Tanzania and Sri Lanka are next in that order. The question of forming a world community so that the producer nations including India may compare their experiences in the cultivation and marketing of cardamom as also secure a fair and reasonable price has been under examination by the Goverments of the producing countries.

As regards rubber, there is no proposal for the consideration of Government of India for stabilisation of prices of raw rubber in the world market. India is self-sufficient in its production and due to glut in rubber market, Indian Government decided to export 5,000 tonnes of natural rubber during 1973 when about 3000 tonnes of rubber was exported. Appropriate measures for maintaining a stable price level are being taken by the Government by way of fixing of minimum price for various grades of rubber.

COIR AND COIR PRODUCTS EXPORT UP

Exports of coir and coir products from India have increased to Rs. 66 million during the first five months of 1974-75 (April-August 1974) from Rs. 48.55 million in the corresponding period of the preceding year (April-August 1973). In terms of quantity also, the increase was recorded at 161,665 quintals as against 146,892 quintals.

Almost all the varieties of coir products recorded increase during April-August 1974. But rise in export earnings of coir rugs and carpets was very sharp-Rs. 5.27 million from only Rs. 20,726. Among other products, coir mats export improved to Rs. 27.50 million from Rs. 21.57 million, coir yarn to Rs. 27.26 million from Rs. 23 million and coir mattings Rs. 5.20 million from Rs. 3 million. Other varieties supplied overseas included coir fibre, coir rope, curled coir, coir-other sorts and rubberised coir goods. However, excepting curled coir whose exports registered marginal decline during April-August 1974 and rubberised coir goods which did not figure at all in exports during this period, the other varieties improved their offtake.

During the period under review, coir rugs and carpets exports shot up mainly because of sharp rise in the imports of USSR while rise in exports of coir mats was mainly attributed to the increased purchases of USA, Japan, Federal Republic of Germany, UK, and France. France, Netherland and UK were the leading customers which bought coir yarn at an increased quantum and value and contributed to the overall exports of the item.

India's total exports of coir and coir products during 1973-74 were of the order of Rs. 155.40 million. The exports improved to this level from Rs. 148.40 million in 1972-73. The export quantum during the respective years at 46,689 tonnes (1973-74), 49,489 tonnes (1972-73) and 52,312 tonnes (1971-72) obviously indicates that the unit value of coir goods export has been improving year after year.

PROSPECTS FOR CRUSHED BONES IN BELGIAN MARKETS

Mainly used in the manufacture of gelatine, crushed bones have an ever increasing demand in the Belgian market; over a five year period (1969-1973) these imports into the Belgian market rose by over 118 per cent from 36870 tonnes to 80,400 tonnes. Next to worked diamonds, crushed bones constitute the second largest item imported by Belgium from India. During 1973-74, Indian exports of the bones to Belgium totalled nearly Rs. 27 million (23.72 million kgs.). In fact, Belgium has been India's leading buyer of crushed bones in recent years.

The Indian Embassy in Brussels has informed that Indian cruthed bones are highly esteemed by the local end-users and hence there would be scope for further improvement in their offtake. Belgium imports from other competing sources, such as Argentina, are reported to be dwindling while their demand for the product has been on the rise.

During 1973-74, India's total exports of crushed bones were of the order of Rs. 90 million as against Rs. 53.50 milllion in 1972-73 and Rs. 51 million in 1971-72.

Over 12 countries imported crushed bones from India during 1973-74. In terms of quantity, about 84.40 million kgs. were supplied to these markets. Next to Belgium which bought 23.70 million kgs. at a value of Rs. 27 million during the year, UK purchased 18.25 million kgs. at Rs. 17.90 million, Japan 11.20 million kgs. at Rs. 13.45 million, France 10.10 million kgs. at Rs. 9.75 million, Federal Republic of Germany nearly 7 million kgs. at Rs. 8.53 million, Bulgaria 5.26 million kgs. at Rs. 5.45 million, Czechoslovakia nearly 3 million kgs. at Rs. 3.15 million, Hungary 2.90 million kgs. at Rs. 2.50 million and Federal Republic of Germany 1.50 million kgs. at Rs. 1.35 million.

ENGINEERING TRADE FAIR PLANNED

With the primary objective of expanding and diversifying export trade in engineering products, an exclusive Engineering Trade Fair is being planned to be organised in New Delhi in February 1975. The organisers of the Fair, Association of Indian Engineering Industry Pragati Maidan, New Delhi have reported that preparations for the Fair are well under progress.

Already encouraging response has been received from several Indian business organisations, representing the various walks of the country's engineering industries, to participate in the forthcoming fair. Participation of international organisations such as UNIDO and ITC as well as foreign missions in India is also expected. The organisers of this first ever Indian Engineering Trade Fair hoped that substantial business opportunities will emerge as a result of the fair and a large number of export deals for specific products will be finalised. To this end over two thousand foreign buyers have been invited to visit the Fair a d witness for themselves the diversity and sophistication of India's engineering industry. The Fair Authorities have stated that they enjoy the support of ministries of Industry and civil supplies, Commerce, and External Affairs

INDIA'S PARTICIPATION AT BAGHDAD FAIR

Besides 39 other countries, India participated in the Eleventh Baghdad International Fair held during October 1974. In keeping with its export trade policy for switching over to non-traditional lines from agromineral based commodities, India has sought to project its image in industrial capability through its participation in the Fair with display emphasis on heavy and light engineering products. Over 80 manufacturers and exporting units participated in the Indian Pavilion and the total value of goods exhibited was about Rs. 1.9 million.

India's participation in the Fair proved successful from trade angle. It helped generate interest among the visitors to the Pavilion for a variety of Indian manufactures. It was found possible to introduce new items in Iraqi market, particularly heavy duty compressors and scientific instruments. Besides, a lot of interest was generated in other items such as electronic equipment, bulldozers and fork lifts. Orders to the tune of Rs. 20 to 30 million are expected as a result of the participation.

Baghdad Fair is basically a quota oriented one. The total quota allocated to India Pavilion was of the order of over Rs. 3.50 million for both capital and consumer goods. This was equitably distributed among the various participants.

Based on the interest shown by the trading community that visited the India Pavilion, it may be mentioned that among others the following items have good prospects for export to Iraq : auto vehicles, structurals, steel pipes and tubes, chemicals and pharmaceuticals, earth moving and road building equipment, tea, spices, electric fans, air conditioners, sewing machines, kitchen appliances, transistor radios, surgical instruments, electronic equipment, plywood and wood products, processed tinned products, cotton textiles and handicrafts, artsilk fabrics and heavy and light engieeering products.

WORLD TRADE IN PRIMARY COMMODITIES

For the first time in the postwar period, the growth rate of the value of world commodity trade outstripped that of the value of trade in manufactures during 1973, according to the Annual Report on Trade

Trends, published by the Secretariat of the General Agreement on Tariffs and Trade (GATT), Geneva.

The foreign trade of developing countries witnessed continued acceleration in 1973 and there was a marginal increase in their share in world exports. Their exports are estimated to have been 37 per cent higher in dollar value and about 8 per cent higher in volume than in 1972. In terms of value, exports of manufactured products continued to be the most dynamic category of export from the developing countries during 1973. In this year, the developing countries as a whole recorded a trade surplus of about $ 11 billion. Oil exporting developing countries had a joint surplus of $ 21 billion while the non-oil exporters recorded a deficit of nearly $ 10 billion.

While this is the position of developing countries, foreign trade of the centrally planned economies of East Europe continued to expand both in terms of value and volume. Also their foreign trade grew faster than production and exchanges with third countries grew faster than inter-area trade.

The GATT Annual Report has attributed the rise in commodity prices to a number of factors such as the sudden and steep rise in demand for commodities by industrial countries. The supply of food and other agricultural materials was seriously affected by adverse weather conditions during 1972 and its impact was felt in 1973 when commodities' stocks were reduced to unprecedented low levels. The international output of live-stock also fell due to loss of profitability on account of increases in the cost of feeding stuffs. Also, there has been a cyclical downturn in investment for some commodities which were essential for industrial production such as non-ferrous metals, iron and wood pulp. Exchange rate fluctuations, monetary uncertainties and the general inflationary climate also stimulated speculative buying activities in commodity markets.

Another striking feature of 1973 as reported by GATT Secretariat was the continued rise in the industrialised countries' dependence on international trade. With the economic boom most rapid in sectors whose growth requires a particularly large contribution from imports, the foreign trade of these countries expanded much more rapidly than their Gross National Product (G.N.P.). The volume of trade rose by 12 percent (during 1973) and that of their exports by 14 per cent.

The acceleration of foreign trade of developing countries witnessed in 1972 continued in 1973. Their total export earnings in terms of dollars increased by about 37 per cent as against 18 per cent in 1972 and roughly 7 per cent on annual average in the preceding decade. Nearly 40 per cent of the overall increase in the export proceeds of developing countries in 1973 was accounted for by exports of petroleum. Manufactures seem to have accounted for more than one-half of their exports in the year. Shipments of manufactures from developing countries to Japan, for example, almost trebled in terms of value in 1973. There was also the development of product diversification of their manufactured exports; shipments of engineering products to the developed market economies increased by two-thirds in 1973.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

SKETCH ON MAN-MADE FIBRE INDUSTRY

The progress of man-made fibre industry in India is to be considered remarkable in view of the fact that it just started less than two decades and a half ago. At the turn of the sixties, the industry comprised only six rayon units with an output of about 37 million kgs of made ups, 20.3 million kgs of viscose staple and 16·7 million kgs of rayon filament. Since then not only the existing units expanded and diversified their production range but a number of new units came up. In 1962, the Indian economy also entered the era of synthetics. Between then and 1973, the output of man-made fibres nearly trebled, averaging an increase of about 30 percent per annum. The output in 1973 was about 143 million kgs. as against a licensed capacity of 205 5 million kgs. In addition to the production of man-made fibres, man-made fibre fabrics have also registered gradual increase and their present production is stated to be around

1200 million metres. In the context of exports also, the man-made textile industry has made good progress from a small beginning of Rs. 4.17 million in 1953 to Rs. 210 million on an average now and Rs. 350 million to Rs 400 million in the near future.

It is envisaged that the production of cellulosic fibres would be 203 million kgs by 1978-79 as against an estimated capacity of 225 million kgs. As regards synthetic fibres, the envisaged targets for 1978-79 (the terminal year of Fifth the Five - Year Plan) are 85 million kgs of production as against the capacity of 104 million kgs. Thus, by the end of the Fifth Five Year Plan, the envisaged target for man-made fibres as a whole is 329 million kgs of production capacity and 288 million kgs of of estimated production. Besides, the production target for man-made fibre fabrics is estimated at 2,000 million metres as against 10,000 million metres of cotton cloth.

Starting with a limited production of 2.5 million kgs in 1951 and with only two units in production, the man-made fibre industry currently has 21 plants with a production capacity of about 143 million kgs per year catering to the needs of more than 100,000 power looms and nearly 400,000 handlooms in the country.

Rayon grade wood pulp constitutes the major raw material for the man-made fibre industry. After extensive research, it has been found that bamboo and eucalyptus trees are suitable for the production of this pulp like soft wood Efforts towards achieving import substitution in the field of raw materials (caprolactam and D.M.T) for synthetic fibre industry are also gathering momentum. Several projects have been set up for producing raw materials, for synthetic fibres and once these projects materialise, the country would have the capacity to produce 90,000 tonnes of synthetic fibres per year resulting in foreign exchange, saving of about Rs. 360 million a year.

India is now in a position to manufacture and even export complete range of rayon and allied plant and machiney with very few imported components. The total licensed capacity in synthetic fibre machinery industry and rayon machinery industry is Rs. 130 million (6500 tonnes approximately) and Rs. 30 million (1500 tonnes approximately), respectively. Additonal capacity covered by letters of intent in synthetic fibre machinery industry is of the order of 7885 tonnes. The production during 1973-74 of synthetic fibre machinery industry was of the order of Rs. 7.5 million while that of rayon machinery was Rs. 47.5 million. Certain chemical plant manufacturers are also making some of the equipment needed for sophisticated polymerisation, spinning and take-up equipment in respect of nylon and polyster plants.

INDIA'S FOREIGN EXCHANGE RESOURCE POSITION

India's foreign exchange reserves held by the Reserve Bank of India have registered a sharp increase of Rs. 1558.2 million as on November 1, 1974. The upswing was mainly due to drawal of equivalent US $ 200 million (Rs. 1500 million) by way of Special Drawing Rights (SDRS) from International Monetary Fund (IMF) under oil facility operated by the Fund. IMF permitted such extra drawals of SDRs to assist the balance of payments position of member countries affected by the sharp rise in oil prices in the past several months.

The foreign exchange reserves held by the Reserve Bank of India improved from Rs. 4592.5 million to Rs. 6150.7 million, mainly on account of receipt of these SDRs.

Foreign securities held in the Issue Department of the RBI have remained unchanged at Rs. 1417.3 million. The total foreign exchange resources on November 1, 1974 amounted to Rs. 7568 million. This compares with the total foreign exchange resource position six months ago (covering slack season) of Rs. 5753.2 million and represents a rise of Rs. 1814.8 million.

Discounting the accretion of SDR's worth Rs. 1500 million, the improvement in India's foreign exchange position over the past six months would be of the order of neary Rs. 314.8 million.

I.M.F.'s newly created oil facility totalling over 845 million SDRs was availed by twenty six of its member countries. Of them, India drew worth 200 million SDRs.

India has already drawn Rs. 350 million under the compensatory financing facility. With the 200 million SDRs the total drawing from IMF by India amounted to Rs. 5370 million.

India's entitlement under the oil facility is 504 million SDRs. It has been estimated that the revenues of the established oil producing countries would grow enormously from £ 74 billion in 1974 to more than 130 billion in 1980.

IMPORT BAN ON TEXTILE MACHINERY

The Government of India have imposed a complete ban on the import of textile machinery. So far, the mill and handloom sectors were allowed to import machinery, though not directly, through Indians returning from or residing abroad, up to a.c. i.f. value of Rs. 2.5 million. The restraint on the import of machinery so far has been applicable to textiles (including those dyed, printed or otherwise processed) manufactured, produced or processed on power looms. The ban now announced will be applicable to textiles "manufactured, produced or processed by other processes".

The textile machinery industry in India has witnessed substantial progress over the years. The industry is currently manufacturing the entire range of spinning, weaving and processing machinery of high quality. Besides meeting domestic demand, it has come to spare sizeable surpluses for export.

The industry's installed capacity is of the order of Rs. 500 million per year, excluding its capacity for spares and components. An additional capacity of Rs. 320 million is under implementation. Actual output of complete textile machinery was worth Rs. 306 million in 1972 and about Rs. 320 million during 1973. Imported raw materials for the manufacture of textile machinery are limited to about 5 per cent of the requirements.

The capacity which is already installed and is under installation is expected to be adequate to meet the future demand for general purpose textile machinery. However, additional capacities are sought to be created for the manufacture of sophisticated machines like shuttleless looms, knitting machines and specialised finishing equipment.

ELECTRONIC INDUSTRY
STATEWISE REVIEW

With annual production of over Rs. 2400 million and exports touching a new high at Rs. 75 million (1974), India's electronic industry is marching ahead both in production and export field. There is yet a grater need to develop the industry on an equitable basis throughout India. Various States in India have indeed created infrastructural facilities for the growth of the industry in their respective areas in a comprehensive planned manner. At present, active plans are under way to set up Functional Industrial Estates in electronics where ready-made facilities could be accorded to potential entrepreneurs. Already the entrepreneurs which have a sound backing of technical know-how in electronics have been provided a number of facilities in regard to Testing and Development (T & D) with the assistance of the Department of Electronics. A number of Indian states have already achieved a remarkable progress in setting up such industrial estates equipped with Testing and Development (T & D) facilities.

Maharashtra, for instance, has been able to develop a number of electronic units in small and organised sectors so far. Their range of production today covers a large number of electronic products - TV, tape recorders, CCTV, Deflection components, Digital equipment, EDC, PA equipment and so on. The base of electronic sector is very sound at industrial centres like Bombay and Poona. Notwithstanding the progress achieved by these centres in the field, attempts are underway to locate new units at various other places in the State like Nagpur, Nasik and Aurangabad. Besides, a comperhensive plan is being formulated for speedy development of electronic industries in the Vidarbha region. The State Government proposes to set up a T & D centre in the State to be run in close co-ordination with the Poona Engineering College. The proposal has been already approved by the Department of Electronics and a sum of nearly Rs. 0.5 million has been sanctioned to cover the first phase of the project.

Andhra Pradesh is one of the progressive states in this line of production. Already a number of electronic units in small or organised sector are engaged in the production of TV, tape recorders, EDC, Electronic capacitors, Digital equipment etc. The State Government is presently engaged in setting up a Functional Electronic Estate at Maula Ali (close to the Electronic Corporation of India Limited (ECIL) plant) for the benefit of ancillary units. In addition, the State also proposes to set up yet another Functional Electronic state at Visakhapatnam in collaboration with the Andhra University for Naval, Marine and Industrial Control equipment. A scheme to set up a T & D Centre near the Estate is also under active consideration.

West Bengal State too has made sizeable progress in promoting growth of electronics in the small and medium scale sectors. So far, 3 units have been approved for the manufacture of TV sets. A scheme for the Development of Electronics in the state has already been formulated and an Electronics Development Corporation has been set up. The corporation is expected to take a number of measures for the growth of the electronic sector in the state. Recently, a letter of intent has been issued to the West Bengal Industrial Development Corporation for the manufacture of 5000 TV receivers and other schemes for the production of TV picture tubes and Walkie-Talkie sets have also been approved. Apart from this, the State Government also proposes to set up Functional Electronic Estate near Calcutta as also a T & D Centres at by near place. A sum of nearly Rs. 0.35 million has been sanctioned for the first phase of the scheme.

In Tamil Nadu State, already a number of units have been set up in small scale and organised sectors for the manufacture of Televisions, Tape recorders, TV Deflection components etc. A functional estate, namely, Vikram Sarabhai Electronic Estate has been set up near Madras at Adyar for manufacturing electronic products as well as instruments. The Department of Electronics has already approved a scheme to set up a T & D Centre at Madras and has sanctioned an amount of Rs. 0.65 million for the completion of the first phase.

Punjab is also one of the States where development of electronics has been taken on priority basis. Like State Industrial Development Corporations in the other States the Corporation in Punjab has also been granted licence to manufacture TV receivers, transistors, electronic components including Walkie-Talkie sets. Production of TV sets has already been commenced at Chandigarh by a joint venture. The State Govenment proposes to set up a Functional Electronic Estate at Mohali near Chandigarh as also a T & D Centre at a nearby place.

Kerala is the first state in India to have set up a separate Electronic Development Corporation. The State's Electronic Development Corporation holds a number of letters of intent for the manufacture of TV sets and electronic components. The Corporation is going ahead with the implementation of many export oriented projects in the fields of electrolytic capacitors, monolithic capacitors, pulse transformers and delay lines which involve very significant foreign exchange earnings. In addition, one more State public sector undertaking, M/s. United Electrical Industries, have received letters of intent for the manufacture of capacitors, resistors and SCR's. Besides this, two more large scale units are presently manufacturing switches, connectors, capacitors etc. The State Government is engaged in setting up a Functional Electronic Estate at Karakulam near Trivandrum. A proposal to set up a T & D Centre by the State Government is being studied by the Department of Electronics.

Haryana State is equally instrumental in the development of Electronic industry. Faridabad, the significant industrial centre, today, has a number of electronic units. The manufacture of TV receivers has been commenced on a joint venture basis and production of trans-receivers is to begin soon.

In the Gujarat State, a number of units have been approved for the production of various electronic items and instruments. Already an industrial estate at Marakpura (near Baroda) is functioning and a T & D Centre is proposed to be set up soon.

In Himachal Pradesh efforts are underway to set up an electronic Estate at Solan - the newly emerging industrial centre having good communication facilities. The main line of production in the State is to be TV sets. Licences have been accorded by the Indian Government in pursuance of its policy to encourage industrial activity in the backward hilly regions of India.

Uttar Pradesh is also gradually emerging on India's electronic map in recent years. Today, the State has a sizeable number of electronic units for the manufacture of a variety of items in the field, such as, TV, electronic desk calculators, integrated circuits electrolytic capacitors and connectors etc. Ghaziabad, a small town, has emerged as an electronic centre for the manufacture of semi conductor devices, calculators and components. It is the centre where the second unit of M/s. Bharat Electronics Limited (BEL) has been set up recently. Besides, a unit in the private sector is soon to commence production of picture tubes. The State Industrial Development Corporation has recently been granted licence to manufacture TV sets in the eastern region which is partially backward. The State is also instrumental in setting up a Functional Electronic Estate at Panki near Kanpur. The State Government's endeavour to set up a separate Electronic Corporation is gathering momentum. The Department of Electronics is encouraging the State Government to develop its hill areas for which a Corporation known as the UP Parvatiya Vikas Nigam (Hill Development Corporation) has been set up. The Corporation has received a licence to mauufacture 5000 TV sets and the production is likely to commence shortly. The State Government has proposed to set up a T & D Centre in the electronic estate at Kanpur.

Like other states, Rajasthan is also gradually entering into the production of electronic items like TV sets, semi-conductor devices, resistors etc. The State's Minerals and Industrial Development Corporation has been approved for the manufacture of TV sets. The efforts are underway to set up two Functional Electronic Estates, one each near Jaipur and at Pilani (close to the Central Electronics Engineering Research Institute) as also a T & D Centre at Jaipur.

In Orissa State, some progress has been made in setting up a unit for manufacture of TV receivers with technical know-how from M/s. Hindustan Aeronautics Limited (HAL). Hyderabad.

The Bihar State has also 20 electronic units and 3 units in the organised sector for manufacture of electronic components. Jammu and Kashmir State has two units, one each in small scale and organised sector for TV manufacture and connectors.

In the North East region, which includes the States of Assam, Meghalaya, Manipur, Tripura and Nagaland and some union territories of Arunachal and Mizoram, no significant progress has been achieved in this line of manufacture. However, attempts are being made to explore the possibilities to set up electronics estates to manufacture some electronic items.

During the Fifth Five Year Plan (1974-79), total requirements of electronic and telecommunication equipment have been estimated at Rs. 30,000 million in terms of value. In order to achieve this target. an investment to the tune of Rs. 3500 million has been envisaged. Research and Development (R & D) activities are also to be given more significance during the plan period. There is urgent need to undertake R & D activities at indigenous level rather than to continue with imported technology. This would not only help increase foreign exchange earnings but also boost the prestige of Indian products.

INDIA'S IMPORTS OF PRINCIPAL COMMODITIES

(Rs. in million)

	1971-72	1972-73	1973-74
Cereals	1312.00	808.00	4731.50
Milk and Cream	190.00	179.40	149.95
Fruits and Vegetables	378.00	533.00	484.80
Pulp and Waste Paper	96.00	101.50	92.65
Raw Cotton	1134.00	908.85	520.50
Raw Wool	142.00	118.85	209.50
Jute	—	11.30	122.20
Fertiliser and Crude Minerals	364.00	377.80	509.25
Petroleum and Products	1941.00	2040.40	5602.70
Chemical Elements and Compounds	718.00	913.80	1053.20
Dyeing, Tanning and Colouring Materials	84.00	91.40	103.15
Medicinal and Pharmaceutical Products	266.00	232.20	263.90
Fertiliser Manufactured (Chemical Fertilisers)	8120.00	962.60	1622.00
Plastic Materials	92.00	118.70	152.00
Paper, Paper-boards and Manufactures	349.00	313.60	289.25
Iron and Steel	2376.00	2258.00	2425.60
Copper	512.00	519.00	704.55
Zinc	177.00	228.60	277.20
Lead	78.00	111.55	108.90
Tin	49.00	77.75	125.45
Nickel	64.00	76.40	85.95
Hand Tools and Machine Tools	32.00	37.60	51.00
Machinery other than Electric	2709.00	2979.35	6164.55
Electric Machinery and Appliances	1051.00	1340.20	2141.55
Transport Equipment	946.00	1001.20	884.00
Instruments, Apparatus and Appliances, films, Watches etc.	241.00	279.25	295.35
Grand total (Incl. Other Items)	**18,245.00**	**18,674.40**	**29,164.00**

Source : Director General of Commercial Intelligence and Statistics, Calcutta.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PROCESS TO PRODUCE SODIUM HYDROSULPHIDE

A process to produce Sodium Hydro Sulphide which finds application in leather industry has been developed by the Regional Research Laboratory (RRL), Jorhat, Assam.

Sodium hydrosulphide is used for the removal of hair from hides before tanning. Sodium hydrosulphide will be a better substitute for Sodium monosulphide now being used by the leather industry as the latter suffers from the disadvantage that it hydrolyses gradually to NaOH and sulfuretted hydrogen. This produces swelling effects on the skin during de-hairing and also affects the hair fibre. Use of Sodium hydrosulphide eliminates these disadvantages and thus enables to get a better grain on the leather surface. Besides this, the other uses of sodium hydrosulphide are: moderately strong reducing agent in textile industry; as a basic material for polysulphides; in the sulphur and indigo industry; in the manufacture of aliphatic thiobs; as a floatation agent for copper ores and in the Kraft wood pulp industry.

It is a white hydroscopic compound with a formula weight of 56.07, soluble in water, looses H_2S on boiling and is oxidised in air.

The present demand for sodium monosulphide by the leather Industry is about 12,000 tonnes/yr. Assuming 10 percent of this is replaced by sodium hydrosulphide to begin with, a minimum demand of 1200-1500 T/Yr. can be expected. Sodium hpdrosulphide is not imported.

Sodium hydrosulphide can be produced either from (i) Waste gases containing H_2S or (ii) by using coal and sulphur. The latter process in brief involves finely grinding coal and sulphur and mixing them in suitable proportions heating the mixture and absorbing the evolved H_2S in a solution of sodium hydroxide and filtering the sodium hydrosulphide solution, flaking and packing (66 per cent sodium Hydrosulphide).

Experiments showed that the conversion of sulphur to H_2S is about 80 per cent and conversion of NaOH to sodium Hydrosulphide is about 99 per cent and almost full absorption of H_2S.

The raw materials that are required for production of sodium Hydro Sulphide are Coal, Sulphur, NaOH (Commercial grade) which are all easily avilable.

Equipment required in the process include Grinder, bunkers, mixer, furnace, gas holder, reactor, blower, pump, Condenser, Filter press, storage drums and tanks and flaking machine etc.

The equipment can be made of M.S. or G. I. or Aluminium as the case may be.

CLOTH DENSITY TESTER DEVELOPED

Cloth density tester, an instrument for determining the yarn density in cloth has been developed by the central Scientific Instruments Organisation, Chandigarh recently.

The new Tester determines the yarn density in cloth. By means of this apparatus, the density of warp and weft yarns in single weave cloth not raised or filled can be determined in a lenth of 50 mm or less. It greatly facilitates the tiresome task of yarn counting, by projecting a sharp image of the cloth, in a magnification which can easily be examined with the naked eye.

The cloth specimen adequately extended over the stage of the apparatus, and fixed by clamps, is trans-illuminated on a surface of approx. 20x55 mm. The image of the illuminated surface is projected by a lens and mirror system on a screen, in an exactly tenfold magnification. The screen is provided with cm graduations in lengths of cm in horizonatal direction and 20

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cm in vertical direction. On the magnified image, the number of yarns in the unit length can easily be counted by the naked eye. Two pointers actuated by turning knobs move along behind the screen to facilitate counting the number of yarns in both horizontal and vertical directions respectively.

The aluminium alloys casting case of the apparatus houses the optical system that serves to trans-illuminate and project the image of the cloth under test. The light source of the apparatus is a low voltage high light intensity bulb, adjustable in all directions. The light of the lamp is collected by a concave mirror and by a compound condenser lens system into the opening of the horizontal object carrier stage. On the stage is attached a device by which cloth strip can be moved to and fro for inspection at different places by rotating the two knobs provided above the trans-illuminated box. A coloured filter pocket is also fitted below the device which can hold filter glass of the required colour for viewing the sample in coloured light. The opening on the stage is covered with an easily removeable glass plate.

The all over closed projecting camera is made of sheet iron, with the inside painted dull black. The projecting device is mounted on its front plate. The large plane mirror arranged inside the camera opposite to the objective projects the image on the plastic screen arranged on the front plate of the camera. The pointers serving to facilitate yarn counting are moveable along the graduations immediately behind the screen, The pointers can be shifted in both directions smoothly and without backlash by turning knobs mounted on the front plate of the camera. The transformer reducing mains voltage to the voltage of the projecting lamps is also housed inside the camera.

The Specifications of tne instrument are :

Maximum testing length	3.9 in (30 mm);
Magnification ratio	10 X;
Screen graduction	0—500 mm, each 10 mm;
Transformer	220—110 V/6V, 50—60 c/s, 30 w and
Dimensions of the apparatus approx	24.2×28.3.19.3 in (616×720×490)

The instrument is used to determine the density of warp and weft yarns in single weave cloth not raised or filled. It is being used for textile testing Laboratories, and several other research institutes working on the development of textile. The present demand of the product is met by imports. The institute has developed design and fabricated prototype and the performance of the instrument has been found satisfactory. Any entrepreneur having the usual economical workshop facilities and optical workshop for the production of optical components like lenses and mirror can take up this process as it will be uneconomical for a new unit to start the industry as the product is having limited demand.

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PHARMACEUTICAL FORMULATIONS TO SOVIET UNION

From a meagre Rs. 7.5 million in 1968-69 and only Rs. 60 million in 1969-70, the foreign exchange earning f Indian medicinal and pharmaceutical products rose o Rs. 103 million in 1972-73 and nearly Rs. 150 million during 1973-74.

Contributing to the consistent rise in the exports, M/s. Sandoz India Ltd. (Sandoz House, Dr. Annie Besant Road, Worli, Bombay-18), one of the manufacturers in the line, succeeded in exporting worth Rs. 19.20 million in 1973-74. Of this the largest order was from the Soviet Union which purchased formulations worth as much as Rs. 18 million. The Soviet order related to the supply of Melleril (a tranquiliser) and intestopan for gastro intestinal disorders. Creditably, the entire order was executed within six months. The performance has enabled the company to secure a second order from the Soviet Union for drugs worth Rs. 16.20 million to be supplied during 1974-75.

Other countries to which the company exported its formulations include Czechoslovakia, Rumania, Kenya, Tanzania, Uganda, Zambia, the Arab Republic of Egypt, Sri Lanka, Bangladesh and the Philippines. Efforts are being made to increase the volume of exports to these countries as also to cover more markets.

The Company received an award for the best export performance in pharmaceuticals in 1973-74 from the Basic Chemicals, Pharmaceuticals and Cosmetics Export Promotion Council, Bombay.

The range of drugs exported by the company includes drugs for the treatment of heart diseases, anaemia, malnutrition, gastro-intestinal disorders and mental disability. The specific products are intestopan tablets, suspension and forte capsules, Macalvit syrup, calglufer, Haematrine. Melleril and Digoxin.

Today, it produces most of the drugs from basic stages. Interestingly, besides a Research and Development Centre at Kolshet, Thana (Bombay), it has its own plantation in Munnar on the high ranges of Kerala where medicinal plants like balladona, senna, digitalis and podophyllum are scientifically cultivated.

The company also actively participates in the development of medical education and science in India. Its Films Division has a repertoire of 40 international films on medical and surgical subjects. Films are also produced on Indian medical expertise and Indian health problems. These are screened free to doctors and medical students throughout the country.

The Company also publishes a medical newspaper, the only one of its kind in the country. National and international seminars and symposia on important medical topics are frequently organised. Two all India awards, one for psychiatry and the other for cancer have been instituted.

Besides pharmaceuticals, Sandoz also manufactures dyestuffs and chemicals and agrochemicals. A substantial quantity of dyes and chemicals are exported.

India's production of drugs and pharmaceuticals inclusive of fine chemicals is currently estimated around Rs. 3000 million.

SHIPS FOR EXPORT

Testifying to the advancement of ship building technology in India, M/s. Mazagon Docks Ltd., Bombay in the Public sectors has secured export orders valued at Rs. 80 million. These orders include construction of two 2,500 dwt cargo vessels for Singapore, 64 barges for Iran and one for Saudi Arabia. Other orders are also reported to be under active negotiations.

Over the years, M/s. Mazagon Docks has witnessed considerable progress in ship building to construct not only luxury passenger-cum-cargo ships, cutter suction and grab hopper dredgers, fishing trawlers and barages but also frigates for the Indian Navy. In the field of ship repairs, too, it has made progress and during 1973-74 alone 676 vessels were repaired which included 330 foreign ships. The company's flying squad for carrying out urgent repairs to vessels at foreign ports or during ships' voyage, has earned a name for its efficient and dedicated work. Plans are now reported to be under way for constructing offshore drilling rigs, off shore fixed platforms and semi-submersible as well as jack-up rigs. The company is reported to have already received a letter of intent for fabricating offshore fixed platforms for the Oil and Natural Gas Commission.

Ship repairs during 1973-74 earned for the company as much as Rs. 30.50 million in foreign exchange compared to Rs. 19.10 million in the preceding year. The foreign exchange earnings are expected to rise to Rs. 100 million during 1974-75 on account of ship building and ship repairs.

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RECENT EXPORT ORDERS FOR RAILWAY WAGONS

The Projects and Equipment Corporation (New Delhi) has received an order for supply of 100 bogie covered wagons from the East African Railway Corporation serving Kenya, Uganda and Tanzania. The order was secured against a global tender financed by World Bank. The value of the contract is about Rs. 13.4 million. The prototype of the wagons has been approved by the importers and shipments are expected to be completed by February 1975.

Malaysia and Bangladesh are the two countries in the South East Asian region to which India exports wagons. With Malaysia a contract for the supply of 110 wagons was entered into at a value of Rs. 16.4 million for delivery by December 1975. With Bangladesh the contract was for the supply of 500 wagons worth Rs. 33.20 million for delivery by July 1976.

Exports of railway vehicles including wagons, vans and trucks from India totalled over Rs. 65 million in 1973-74. Yugoslavia, Poland, Iran and Iraq were the major importing countries for railway wagons.

EXPORT PERFORMANCE AND POTENTIAL

RECENT DEVELOPMENTS IN INDIA'S FOREIGN TRADE

"During the half year, April-September 1974, exports came to Rs. 15,180 million or about 41.2 percent higher as compared to Rs. 10,750 million during the corresponding six months of 1973. A few commodities such as sugar, basmati rice, cement, silver, naphtha, bitumen and certain other commodities, have substantially contributed to the increase in export", stated Mr. Y.T. Shah, Secretary to the Ministry of Commerce while presiding over the tenth Annual General Meeting of the Indian Institute of Foreign Trade. The Commerce Secretary felt confident that the original target of Rs. 26,000 million for 1974-75 would be reached. Slackening trends had been noticed, however, in certain important commodities such as textiles and marine products, he said.

On import side, the Commerce Secretary said that the cumulative figure for the first six months of 1974-75 was Rs. 18,310 million as against Rs. 11,120 million during the same period last year, registering an increase of nearly 65 percent. In spite of the additional export performance of this magnitude, the trade deficit for the six months alone stands at Rs. 3120 million.

"To a developing country like ours, the international prices of oil, fertilisers, foodgrains and raw materials have imposed tremendous hardship and resulted in an adverse movement of balance of trade as also the terms of trade. We are faced with a critical situation wherein a substantial portion of India's export earnings will be utilised this year on imports of oil, fertilisers and food. At the same time, India's export items which have marginally benefited by the world commodity boom during the last year have started witnessing a downward trend in international price. India's import requirements and debt servicing obligations are continually on the increase and hence the need for mounting a massive export effort in the current year and beyond", he said.

The Government of India attaches special significance to the need for regional economic cooperation linked with trade and development. The annual session of the Economic and Social Commissson for Asia and Pacific (ESCAP), earlier known as ECAEF, will be held in New Delhi during the early months of next year. ESCAP was also taking more interest in the field of agriculture and agricultural inputs like fertilisers for which the suggestion of a world fertiliser fund was made at the 30th sesssion of the ECAFE at Colmboo in March-April this year.

The Commerce Secretary also informed that the Asian Clearing Union was expected to start functioning in the very near future. This would help in expanding intra-member trade among the five countries who have already accepted the Clearing Union viz, India, Nepal, Sri Lanka, Pakistan and Iran. The formation of a free trade area among the ESCAP countries might take some time. Meanwhile, attempts could be made towards large scale exchange of tariff concessions on bilateral basis, possibly with the condition of multilateral application for all ESCAP member countries.

The second meeting of the Indo-EEC Joint Commission will be held in New Delhi from December 16 to 18, 1974. The first meeting of the Joint Commission was held in May this year and the discussions covered, among others, examination of several agreements, namely, jute and coir manufactures, cotton textiles cotton and silk handlooms and handicrafts, non-tariff barriers, tariff adjustments, generalised system of preferences, diversification and promotion of trade, cooperation linked with trade and cooperation in third countries. In order to make an in depth study of the mutual problems and evolve specific proposals the Joint Commission constituted two Sub-Commissions, one on sectoral agreements and the other on identification of specific areas of cooperation. These two Sub-Commissions were expected to submit their recommendations shortly for consideration in the forthcoming Joint Commission Meeting, the Commercial Secretary informed.

INDO CZECH PROTOCOL SIGNED

A protocol on Economic, Trade and Technical Coopration has been signed recently between India and Czechoslovakia.

The Indo-Czechoslovak Joint Committee for economic, trade and technical cooperation which met in Delhi in November 1974, conducted its meeting in four Working Groups on trade exchanges, science and technology, electronics and industrial cooperation.

The growth of Indo-Czechoslovak trade was reviewed and measures to increase it, taking into account the need of crucial commodities by both sides, was discussed. It was agreed that efforts should be made for the increase in export of non-traditional items from India to Czechoslovakia such as processed food products, products of manufacturing units set up with Czechoslovak assistance or collaboration, engineering products and a wide range of consumer goods. It was hoped that the credit extended under the Third Economic Agreement would be utilised expeditiously.

In the field of science and technology both sides drew up a concrete programme of cooperation for the period January 1975 to December 1976 in accordance with the Agreement in this field signed in May, 1973. The programme envisages cooperation in beneficiation of low grade ferrous and non-ferrous ores, building sciences, industrial microbiology and industrial fermentation, welding and high pressure vessel technology, medical fields, natural and artificial fibre and fabric, leather research, macromolecular chemistry, application of cybernetics in planning and cooperation in the field of farm machinery. It was agreed that the programme of cooperation should be development oriented through undertaking projects of applied nature of relevance to both countries.

In the new field of electronics, both sides held detailed discussions on the various possible areas of collaboration and trade in electronic items. It was decided to expand the scope of the existing agreement for the production of radar equipment, expand mutual trade in electronic components, pay special attention to collaboration in computer peripherals and consider utilisation by the Czechoslovak side of the facilities offered by the Santa Cruz Electronic Export Processing Zone.

In the field of industrial cooperation both sides recognised the need for diversifying scope of collaboration into new areas of sophisticated technology. Examination of possibilities of undertaking joint ventures in third countries was particularly discussed by both sides. Constructive and time bound recommendations were also made relating to fuller utilisation of capacity of Czechoslovak aided projects.

The Indo-Czechoslovak Joint Committee was set up in 1966. Its fourth meeting was held in Prague in June last year. Its present meeting is the fifth one in the series.

ASIAN ECONOMIC COOPERATION

In the course of the talks which His Imperial Majesty, the Shahenshah of Iran had with India's Prime Minister during his recent visit to New Delhi in early October 1974, it was agreed that there was scope for greater economic and cultural cooperation within the Asian region as a whole covering the littoral countries of the Indian Ocean. It was agreed that such cooperation would promote trade, regional self-reliance and fuller utilisation of mineral, natural and man-power resources of the region for the benefit of the peoples of all the countries concerned.

The problems and possibilities of regional cooperation in Asia have been receiving the attention of the Economic Ministers of Asian States since 1961. The Third Ministerial Conference of the Asian Economic Cooperation held at Bangkok in late 1968 passed a resolution on the strategy for integrated Development of Regional Cooperation in Asia. A task force was established in the ECAFE Secretariat to elaborate on integrated programmes of action embracing liberalisation of trade, stimulation of production, development of commercial infra-structure and the establishment of payments arrangements. The Asian Council of Ministers which met in Kabul in late 1970 adopted a comprehensive declaration approving in principle the progress made in regard to the schemes of regional cooperation. The Ministers directed the constitution of three committees to examine the regional schemes of economic cooperation, namely, a preparatory committee for the establishment of an Asian Clearing Union, an inter-Governmental Committee for trade expansion and an inter-Governmental Committee for the establishment of an Asian Reserve Bank. The Preparatory Committee of Asian Clearing Union which met at Bangkok in March 1971 prepared a draft agreement for the establishment of the Union and the agreement was forwarded to the member Governments for exmination.

The proposed Union is intended to promote the use of national currencies of the participating countries for trading among themselves, thus providing additional liquidity for foreign transactions. At a meeting of the senior officials of the Governments and Central Banks concerned, held at Bangkok in February 1973, a draft operational agreement establishing the Asian Clearing Union was adopted. India signed the Agreement at the 30th Session of ECAFE held in Colombo in April this year. The Executive Secretary of ECAFE is likely to convene a meeting of the member countries in December this year to finalise the formalities to make the Union functional.

As regards the Asian Trade Expansion Programme, the first meeting of the Inter-Governmental Committee on trade expansion was convened by the Executive Secretary in late 1971. The Committee argeed to launch the Programme among developing countries and in order to implement such a programme expressed the desire that the first meeting of a Trade Negotiations Group should be convened as soon as possible. In the last meeting of the Group held in Bangkok in July this year, it was decided that participating member countries would exchange the request lists in respect of tariff concessions required by them. India has accordingly sent her request lists to Thailand, Malaysia, Philippines, Indonesia, Sri Lanka, Iran and Republic of Korea.

On Asian Reserve Bank, the first meeting of the inter-Governmental Gommittee on establishment of the Bank was held at Bangkok during August, 1972. Besides India, fourteen countries were represented at the meeting and observers from UNCTAD, IMF and Asian Development Bank also attended. The proposed Asian Reserve Bank is conceived for enabling regional countries to pool a part of their monetary reserves for regional development and for financing temporary balance of payments deficits caused by inter-regional trade expansion. The inter-Governmental committee examined the draft guidelines for the establishment of the bank and developed these guidelines into provisions for a draft agreement as a basis for a complete legal instrument. India's participation at the meeting was without commitment to join the proposed institution and without prejudice to the position of its Government in regard to later proposals for improvement of the draft agreement.

An important development in the recent past has been a revival and strengthening of interest in sub-regionalism in Asia. Such a movement is also encouraged by certain developed countries so that they would secure advantage through increased investment in collaboration agreements with members of sub-regional groupings in the ECAFE region. The sub-regional groupings are : the regional Cooperation for Development (RCD) set up in July, 1964 with Iran, Pakistan and Turkey as members, the ASEAN - the Association of South-East Asian Nations - set up in August, 1967 with Indonesia, Malaysia, Philippines, Singapore and Thialand as members and the Ministerial Conference for Economic Development of South East Asia (EAMIC) established in April, 1966 with Indonesia, Japan, Laos, Malaysia, Philippines, Singapore, Thailand, Republic of Vietnam as members. These sub-regional groupings were established mainly to promote economic development, social progress and cultural development of the member countries through mutual cooperation.

ECONOMIC AGREEMENT WITH SUDAN

India and Sudan have recently concluded an agreement embodying the framework, for economic, scientific and technical cooperation. The agreement provides for feasibility studies to be undertaken by India on the possibilities of establishing cement, textile and sugar industries in Sudan. On the basis of the reports of these studies, the two sides would determine where Indian cooperation is needed. India has agreed to supply equipment on a deferred payment basis for the establishment of such industries as the two countries decide on the basis of the feasibility reports.

In addition to the Economic agreement, another agreement for cultural exchanges has also recently been signed between the two countries. The cultural agreement provides for the setting up of a joint committee which would hold periodical meetings to draw up detailed exchange programmes between the two countries.

This agreement envisages exchange of professors and granting of scholarships to students of either country. Exchange of museum objectives, bib-liography materials and specialists is also envisaged under the cultural agreement.

Both the economic and cultural agreements, are at present valid for a term of five years and are automatically renewable for another term of five years unless terminated by either party.

EXPORT TRADE IN FRUITS

India's export trade of all varieties of fruits totalled Rs. 794 million during 1973-74 as compared to Rs. 729.7 million during 1972-73 and Rs. 637.7 million during 1971-72. Fresh fruits and nuts were exported to the tune of Rs. 789 million, Rs. 727 million and Rs. 634.7 million in these years, respectively. Dried fruits, including artificially de-hydrated fruits, fetched foreign exchange worth Rs. 4.9 million, Rs. 2.7 million and nearly Rs. 3 million respectively in these years.

Of the fresh fruits variety, mangoes were exported to the tune of Rs. 3.4 million during 1973-74 (1.7 million kgs.) Major importers in the year were Kuwait, Dubai, Bahrein Islands, U.K. and Qatar. In fact, mangoes were exported to fetch Rs. 5 million in 1972-73 with Kuwait and U. K. as the leading importers. Exports of bananas which touched Rs. 2.95 million in 1972-73 did not fetch sizeable foreign exchange in the subsequent year. During 1972-73, Kuwait and Iran were the major importers, followed by Bahrein Islands. Bangladesh has been the major importer of oranges. It imported the fruit worth Rs. 0.7 million in 1973-74.

Among the varieties of nuts exported, cashew kernels evidently lead the list. Whole cashew kernels were exported to the tune of 42.6 million kg. to secure Rs. 633 million during 1973-74. Major importers were USA and USSR having absorbed worth Rs. 237.85 million and Rs. 222.75 million, respectively. The other important importers were Japan, Canada, UK, Australia and Netherlands. Broken cashew kernels additionally fetched an export value of Rs. 111.38 million. USSR and USA, were again the major importers.

Walnut kernels also have a consistently increasing export market. Their export value was Rs. 9 million during 1971-72, Rs. 16.16 million in 1972-73 and Rs. 28.37 million during 1973-74. During 1973-74, a quantum of 2.3 million kg. was exported with U.K. as the most important buyer (924,000 kg. at a value of Rs. 11.4 million), followed by Australia, Japan, USSR and Canada. Besides walnut kernels, walnuts in the shell form netted an additional foreign exchange of Rs. 9 million, mainly from Czechoslovakia during 1973-74. Coconuts, apricots, almonds were among the other edible nuts that India exported.

Fresh tamarind is another item of export in the line. The value of its export was nearly Rs. 0.2 million during 1973-74 while in the preceding year it was of the order of Rs. 0.3 million. Italy, Lebanon, Afghanistan and the UK, were the major importers of this item.

Among dried fruits, dry tamarind is an important line of export from India, having fetched Rs. 3 million during 1973-74 which was nearly double of the export proceeds during the preceding year. Saudi Arabia Syria, USA, UK, Japan and Bahrein Islands were the principal importers. Other important lines of overseas supply in this group are dry mango slices, raisins and apricots.

EXPORT OF GARMENTS

India's export trade in garments during the first six months of 1974-75 (April-September 1974) was worth Rs. 500 million as against exports worth only Rs. 177.70 million during the same period of 1973-74.

An important measure being taken by the Government of India and the Cotton Textiles Export Promotion Council, Bombay to increase the export trade in garments is to maintain prices of cotton fabrics-both millmade and handloom-at reasonable levels so that the prices of garments continue to be competitive in the markets.

Participation in clothing exhibitions abroad and similar exhibitions in India is also being organised apart from strengthening publicity campaigns overseas to popularise Indian garments. A set-off of one sq. metre of controlled cloth is allowed against exports of mill-made garments worth Rs. 7.5 on f.o.b. basis as a further measure of sustaining the garment exports. Also the question of providing some specific assistance to the garment exporters is under the consideration of the Government of India for the shipment period October 1974-March 1975.

AGREEMENTS FOR EXPORT OF MINERALS

The Government of India have entered into certain agreements with Foreign Governments for the export of iron ore, coal, manganese ore, mica and other minerals. To export iron ore, for instance, the Indian Government have agreements with Japan, Rumaina, Czechoslovakia, Poland, Hungary and Belgium. The anticipated quantity of export of iron ore to these countries is about 25 million tonnes during 1974-75.

The Indian Government have also entered into agreement with Bangladesh and Burma for supply of coal and under these agreements it is anticipated that 760,000 tonnes would be exported during 1974-75.

With Japan, Czechoslovakia, Bulgaria, Korea, Taiwan and the Federal Republic of Germany, agreements were reached to supply manganese ore and the anticipated quantity for export during 1974-75 is of the order of 1.4 million tonnes.

As far as mica is concerned, the major countries to which exports are made are U.S.S.R., Poland, U.S.A., U.K., Japan and France. During 1974-75, the anticipated export to these countries is 25,000 tonnes.

The export of pig iron from India is allowed on merits only. India's export value of iron ore was Rs. 1278.80 million (23.16 million tonnes) during 1973-74. In the same year, the export value and quantum of manganese ore, coal and mica was Rs. 90 million (0.75 million tonnes), Rs. 29.45 million (0.36 million tonnes) and Rs. 126.76 million (19096 tonnes).

RECORD EXPORTS OF CHEMICALS AND PHARMACEUTICALS

India's exports of basic chemicals and pharmaceuticals and cosmetics attained an all time record of Rs. 802 million in 1973-74, registering an increase of 93 per cent over the export value at Rs. 414.60 million in the preceding year. Interestingly, the achievement far exceeded the export target at Rs. 500 million set for year and represented a more than five fold increase over the export earnings of these products at Rs. 156.80 million a decade back (1963-64), according to the Basic Chemicals, Pharmaceuticals and Cosmetics Export Promotion Council, Bombay.

The increase in exports in 1973-74 in comparison to the preceding year was registered by almost all categories in the group with the exception, however, of glycerine, soaps, detergents, cosmetics and toiletries. The foreign exchange earning of drugs, pharmaceuticals and fine chemicals including medicinal castor oil nearly trebled to Rs. 375.40 million from Rs. 135.30 million. Medicinal castor oil was the major items of export growth. It improved its offtake to Rs. 211.30 million in 1973-74 from Rs. 20.3 million in the preceding year. USSR, UK, France and Yugoslavia were the principal importing countries. Absorbent cotton wool/surgical dressings which earned more at Rs. 22.60 million as compared to Rs. 8.3 million, registered nearly three fold increase, and was mainly bought by Poland, Italy, Japan, Thailand, Bangladesh and Kenya. The export earning of quinine salts rose appreciably to Rs. 11.80 million from Rs. 7 million in 1972-73. Federal Republic of Germany, Hungary, USSR, and Bulgaria were the main buyers. Menthol also improved its offtake to the tune of Rs. 1.36 million from nearly Rs. 0.32 million, UK being the major importer. The other major items of export in the group were Beta ionone, Strychnine and Brucine Alkaloids, Sodium Salicylate, Papain, Berberine Hydrochloride, Ephedrine Hydrochloride, Potassium Citrate, Antibiotic preparations, Proprietary and Patent Medicines and Ayurvedic and Unani Medicines. While basic drugs and fine chemicals found their way into sophisticated markets like USA, UK, Federal Republic of Germany, Australia, Netherlands and USSR finished formulations were mainly exported to the developing countries of Africa, South East and West Asia as well as to USSR.

Dyes, intermediates, alcohol and Coal tar Chemicals constituted another sector of sizeable export dynamism. These were supplied overseas at a value of Rs. 102.50 million in 1973-74 against Rs. 59.50 million in 1972-73, recording an increase of 72 per cent. Major items contributing to this increase included Basic Dyes, Sulphur Dyes, Organic Pigments, Vat Dyes, Azoic Dyes, Xylenes and Anthraquinone. Important buyers were United Kingdom, Netherlands, Japan, Italy, Hungary and Australia. The export progress of organic pigments which were mainly imported by the UK, USA, Federal Republic of Germany, Australia and Netherlands, was also particularly notable. These fetched Rs. 14.18 million in foreign exchange during the year compared to Rs. 9.23 million in 1972-73. Similarly, sulphur dyes earned more at Rs. 16.20 million compared to Rs. 6 million. UK, USA, Netherlands and Iran continued to be the leading buyers. Interestingly, Xylene which did not figure at all in the export list in 1972-73, was exported in the following year to the extent of Rs. 8.42 million.

Basic inorganic and organic chemicals constitute the core sector of the chemicals industry and as such the export of these products has obvious limitations. Notwithstanding this, the export earning of this section including agro-chemicals rose considerably to Rs. 119.20 million in 1973-74 from Rs. 67 million in the preceding year. In this group, Octanol was expored for the first time in 1973-74 at a value of Rs. 4.6 million to Netherlands. Hydrochloric acid was another items of considerable export growth-Rs. 26.20 million in 1973-74 against Rs. 9.70 million in 1972-73, an increase of 170 per cent. Saudi Arabia, Dubai and Abu Dhabi were the main buying countries. Overseas supplies of Carbon Black increased to Rs. 12.80 million from Rs. 2.90 million, mainly to South East Asian countries. Rare

Earth Chloride also improved its offtake to Rs. 10 million in comparison to Rs. 7.90 million. USA, Japan and Yugoslavia were the main export destinations.

Essential oils including, mainly lemon grass oil and sandalwood oil, also revealed an appreciable increase in exports. These were supplied abroad at Rs. 61 million against Rs. 40 million. Of this sandalwood oil accounted for the major portion of the total exports of essential oils in 1973-74. France, UK, USA, Hungary and Netherlands were the chief buyers.

Agarbattis or incense sticks which have been enjoying growing popularity abroad in recent years also fetched increased foreign exchange at Rs. 19.20 million in comparison to Rs. 15.80 million. USA, leads the list of over 120 countries buying agarbattis from India. Exports of crude drugs (mainly psyllium husk/seeds and senna leaves and pods) also earned more at Rs. 77 million in comparison to Rs. 42.90 million. The important buyers were France, Federal Republic of Germany, Czechoslovakia, Hungary and USA.

Glycerine, soaps, detergents, cosmetics and toiletries constituted the only sector which suffered a marginal decline during the year to Rs. 42.30 million from Rs. 48.20 million 1972-73. The major items of exports covered in this group included face podwer, talcum powder, non-spirituous perfumes, toilet soaps, synthetic detergents. hydrogenated castor oil, textile auxiliaries and processed Talc.

Miscellaneous products like biological specimens, stuffed animals and skeletons also witnessed an export uptrend at Rs. 5.4 against Rs. 4.7 million. US and Federal Republic of Germany were the major importers during the year.

SHARP IMPROVEMENT IN TOBACCO EXPORTS

Indian tobacco earned foreign exchange to the tune of Rs. 608 million during the first seven months of 1974-75 (April-October 1974) as against Rs. 489.30 million in the same period of 1973-74, according to the Tobacco Export Promotion Council, Madras. In terms of quantity, the overseas supply was of the order of 53,375 tonnes and 55,185 tonnes in the respective periods. This also indicates better value realisation.

Countrywise intake of Indian tobacco during April-October 1974 indicates that United Kingdom was the biggest buyer which imported 24,195 tonnes at a value of Rs. 313.85 million as against 22,390 tonnes at Rs. 231.50 million in the corresponding period of the preceding year (1973-74). Among the countries in East Europe, USSR constituted the largest importer having bought 10,285 tonnes at Rs. 130 million. In fact, this market alone accounted for the bulk of Indian supplies, taking into account the total tobacco exports to the East Europe region at 12,250 tonnes valued at Rs. 141.30 million. However, in the preceeding year (April-October 1973), USSR's imports were higher Rs. 134.90 million (13,710 tonnes). Among other buyers in the region, Bulgaria and Czechoslovakia are prominent.

Japan led the list of importing destinations in the South and South East Asia region having absorbed the maximum in terms of value at Rs. 63.28 million (4729 tonnes) out of the total India supplies to this region valued at Rs. 77 million (7104 tonnes). Japan's purchases during the period were also higher as compared to its imports last year at Rs. 44.60 million (4493 tonnes). With the imports totalling Rs. 8.52 million (1323 tonnes), Indonesia was the next best buyer in the region. Its purchases during the period, however, registered sharp improvement as compared to its imports during April-October 1973 at only Rs. 0.42 million (110 tonnes). Bangladesh which bought worth Rs. 25.20 million during April-October 1973, reduced its intake heavily to Rs. 1.54 million (389 tonnes) during the period under review. Nepal, Malaysia and Hong Kong were the other markets in the region which imported more during the period.

In the West Europe region Irish Republic (Rs. 20.82 million against Rs. 22.55 million), Belgium (Rs. 13.25 million against Rs. 2.30 million), Netherlands (Rs. 7.85 million against Rs. 2.65 million) and France (Rs. 4.30 million against Rs. 0.60 million) were the major destinations. The overall purchases of West Europe region, totalled Rs. 47.35 million (5587 tonnes) against Rs. 28.30 million (3685 tonnes).

In the Africa region Libya, Zaire Republic and Somalia were prominent markets which imported worth nearly Rs. 9 million, Rs. 3.86 million and Rs. 2.90 million respectively. These were higher than their respective purchases valued at Rs. 6.30 million, Rs. 0.48 million and Rs. 1.58 million in the period under review during 1973-74. The total purchases of the Africa region also looked up to Rs. 20.95 million from Rs. 10.40 million.

The Middle East Region also doubled its intake to Rs. 7.55 million during the period under review from Rs. 3.36 million. Saudi Arabia and Iraq were prominent importing destinations.

INDIAN JEWELLERY FETCH MORE FOREIGN EXCHANGE

India's export trade in jewellery and goldsmiths' and silversmiths' ware earned Rs. 44.35 million during 1973-74 which registered sizeable increase over Rs. 29.67 million secured during the preceding year. The exports, in fact, rose to this level from only Rs. 26.75 million in 1968-69, Rs. 28.30 million in 1969-70, Rs. 27.60 million in 1970-71 and Rs. 20 million in 1971-72.

A variety of jewellery figured in India's export trade during 1973-74. Imitation jewellery constituted the prime variety of export dynamism having fetched foreign exchange worth Rs. 29 million while gold, silver and platinum jewellery earned nearly Rs. 15 million. During 1972-73, the former variety had earned Rs. 18.85 million while the latters's share was of the order of Rs. 8.90 million.

In the group of imitation jewellery, the export range included base metal jewellery plated with precious metal, jewellery set with imitation pearls or stones, German silver jewellery and other imitation jewellery excluding artware. UK, USA, USSR, Saudi Arabia, Federal Republic of Germany, Afghanistan, Italy and Bulgaria were the principal destinations.

In the group of gold, silver and platinum metal jewellery, gold jewellery (unset, set with pearls and diamonds and other precious stones), platinum jewellery, silver filigre work silver jewellery manufactures of gold, silver and platinum, and articles with pearls were supplied abroad. Dubai, Kuwait, Switzerland, Qatar, USA, UK, Czechoslovakia, Fiji Islands, France and Netherlands were the main importers.

JOINT VENTURES ABROAD

Fortythree joint ventures abroad are already under operation with Indian assistance while sixtyone ventures are under implementation. Among the projects that are under production, 13 are located in Malaysia, 4 in Kenya, 3 each in Mauritius and Sri Lanka, two each in Ethiopia, Nigeria, Thailand, U K., West Germany and U S.A., one each in Uganda, Libya, Singapore, Fiji Islands, Iran, Yemen, Ireland and Canada. Among the 61 projects under implementation, 18 are located in Malaysia, 10 in Indonesia, five in Mauritius, four each in Kenya and Singapore, three each in Thailand and Afghanistan, two each in Sri Lanka, Philippines, Hongkong and Iran and one each in Tanzania, Cyprus, Dubai, West Germany, U.S.A. and Nepal.

Indian investment in the joint ventures under production amounts to Rs. 77.40 million while the investment in the projects under implementation is estimated to be Rs. 190 million.

It is estimated that the yields of these investments in the shape of dividends, technical know-how fees, royalties and management fees works out so far to Rs. 20.60 million.

It is the business entrepreneurs who propose and set up units abroad after securing necessary approval from the Indian Government. Six projects are reported to have been abandoned by private entreprenurs after remaining in production for some time. All of these units were in African countries. Changing market conditions and difficulties in joint management have largely contributed to the abandonment of these joint projects.

COMMERCIAL LINKS WITH LIBYA

The Indian Embassy in Tripoli (Libya) has recently reported that an Indian consultancy firm, M/s. Dasturs International, have secured consultancy contract for a forge foundry plant in Libya. The contract is valued at nearly 100,000 Libyan Dinars (Rs. 2.7 million). The Indian firm is already working on a feasibility report for a major steel plant in that country.

Following the finalisation of a contract between the two countries providing for Indian cooperation in railway construction in Libya, India has also been invited to tender for a railway technical feasibility contract for a line between Sofax in Tunisia and Tripoli in Libya. The Indian Railways have already sent in their tender.

Libya has also recently invited a delegation of Indian road experts for discussion on construction of roads in Libya. Road construction is one of the major development programmes in that country, according to the Indian Embassy in Libya.

Besides consultancy services, India's economic cooperation with Libya also covers turnkey projects and joint ventures. Of the two Indian turnkey projects in Libya, one relates to the manufacture and erection of transmission line towers in the Tripolitania area by M/s. Kamani Engineering Corporation, Bombay. The other project which pertains to construction, equipment and operation of a textile mill complex in Zunzur has been undertaken by M/s. Star Trading Company (P) Limited of Bombay. India's joint venture in Libya relates to the manufacture of pipes in Benghazi for various requirements like water supply, drainage and sewage.

Physical exports from India to Libya have also witnessed a gradual improvement over the last few years. These totalled Rs. 50.60 million in 1973-74 compared to Rs. 35.50 million in 1972-73, Rs. 18.35 million 1971-72, Rs. 16.50 million in 1970-71 and Rs. 12.48 million in 1969-70.

RISE IN CASHEW KERNEL EXPORTS

India's cashew kernel exports fetched Rs. 765.10 million in foreign exchange during January-September, 1974, registering an increase of Rs. 12.70 million over the export earnings for the whole preceding year and Rs. 179.80 million over the corresponding period of that year. This was made possible due to increase in the unit export value from Rs. 12.66 per kg. to Rs. 18.72 per kg.

Quantitywise, however, the exports during the period of review in 1974 were less at 40,862 tonnes against 46,244 tonnes in the same period of 1973. This is attributable to the lower offtake by the major consuming countries, such as, USA, UK, Japan and Canada.

A similar trend was revealed during the two comparable period in regard to exports of Cashewnut shell lequid. These amounted to 3374 tonnes valued at Rs. 7.2 million, compared to 3462 tonnes valued at nearly Rs. 4 million last year.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

MEDICAL ELECTRONIC EQUIPMENT
A SPOTLIGHT

Medical Electronic equipment manufacture has come to be acknowledged as a sophisticated line of production in the world. India's entry into the manufacture of these sophisticated equipment not only proves its capability in the development of electronics at indigenous level but also its application in a number of essential sectors of production. Since medical electronic equipment are life saving devices, quality and reliability aspects are given prime consideration in their manufacture in India. Thus development of this sophisticated technology has brought India in the forefront in the list of developing countries.

Although of recent origin, the production range of medical electronic equipment covers a number of items which were being imported into the country hitherto. Today, X-ray equipment form a major portion of the equipment currently manufactured in India. However, other types of equipment include ECG machines, intensive/cardiac care units, cardiac pace makers, electro encephalograph, defibrillators, etc. Despite this production progress, India has to import a number of items in the line every year. During 1971-72, production of these items was valued at Rs. 25 million as against Rs. 15 million in 1970-71 and Rs. 12 million in the year before.

Requirement of medical electronic equipment during the Fifth Plan period is estimated at about Rs. 650 million. Of the total requirement, 50 per cent is expected to be accounted for by x-ray equipment. Estimated domestic production including that required for exports is set at Rs. 200 million (1968-69).

The Fifth Plan demand projections of individual electronic equipment are : Portable intensive care units (100 numbers valued at Rs. 5 million); electro cardographs (8000 numbers at Rs. 80 million); DC defibrillators (2500 numbers at Rs. 25 million); external and internal pacemarkers (5000 numbers at Rs. 12.50 million) implantable pacemakers (1000 numbers at Rs. 5 million); cardiac monitor (1000 numbers at Rs. 10 million) Intensive care units (100 numbers at Rs. 20 million); Electro-encephalograph (80numbers at Rs. 9.6 million); Electro-myograph (80 numbers at Rs. 2.8 million) and polygraph-4 channel (50 numbers at Rs. 3 million).

Industrial policy of the Indian Government in this field favours open licensing particularly to those entrepreneurs who possess necessary background experience in the line. Similarly, proposals from the existing units with Research and Development backing are also considered. Apart from these, foreign collaboration proposals are considered on merits, especially for those specific items which require a relatively higher degree of sophistication.

ON INDUSTRIAL FURNACE INDUSTRY

Industrial furnace industry in India is well established. The present production range of the industry covers a wide range of items which caters to exacting needs of user industries. The output of the industry can be broadly classified as i) Electric arc Melting furnaces ii) Induction Melting furnaces and induction heating equipment and iii) heat treatment furnaces.

At present, electric arc melting furnaces are being manufactured by 4 units and their combined estimated installed capacity is of the order of 70 numbers per annum. Taking into account the total licensed capacity of the units in the line at about 90 numbers, the capacity utilisation is nearly 80 per cent. Recently one more unit has been licensed with a capacity of 15 numbers per annum. Besides this, a unit in public sector has been recently issued a letter of intent for a capacity of 10 numbers per annum. The present production range mainly includes furnaces of large sizes. When the public sector unit goes on production stream, furnaces upto 100 tonnes capacity are likely to be covered.

During 1973-74, the output of electric arc melting furnaces was of the order of 42 numbers, valued at Rs. 95 million. Of the existing 4 units presently under production, two are concentrating on production with their full capacity while the other two, manufacturing only smaller capacity furnaces, are yet to achieve their full capacity. The overall capacity utilisation in this sector is of the order of about 60 per cent. The existing capacity is considered to be enough to take care of the projected demand by 1978-79. However, proposals for large and technological sophistications can be considered. Import of these type of furnaces has been totally banned in India. A good beginning has already been made in the field of exports in recent years. During 1972, one furnace was exported at a value of Rs. 1.2 million and an order for 3 more had also been secured.

Induction melting furnaces are being manufactured by 3 units at present. Of these, two are turning out mains frequency type while the remaining one is concentrating on medium frequency type. As against the total licensed capacity of 34 numbers per annum, the installed capacity is of the order of 20 numbers per aunum. Achieving about 75 per cent capacity utilisation, the output during 1973-74 was 15 numbers. Induction heating equipment are used for reheating materials for further operations or heat treatment. These are presently being manufactured by 2 units in the range of mains and medium frequency types. During 1973-74, the production was of the order of two numbers.

Being increasingly utilised for foundry applications, demand for both these types of induction furnaces is increasing rapidly. High frequency types are not being manufactured in India at present. Production of these types of furnaces can be undertaken by electrical equipment units through diversification. In addition to this, there exists scope for setting up new medium scale units in this line of production. Foreign technical collaboration is also permitted on merit.

Heat treatment furnaces are presently being manufactured by 9 units having a combined installed capacity of Rs. 50 million. The licensed capacity in this field is of the order of Rs. 58 million. Besides, additional capacity to the tune of Rs. 70 million has been covered by letters of intent. Certain types of furnaces are still being imported and value of such imports during 1972-73 was of the order of Rs. 7.6 million. Besides the units in organised sector mentioned above, there are also some units in the small scale sector which are producing heat traetment furnaces.

Demand for various types of furnaces by 1978-79 has been estimated at Rs. 100 million each for steel plant furnaces as also for general heat treatment.

During 1973-74, India effected some export of electric furnaces for melting and heating to Malaysia, Kenya, Iraq and Sri Lanka.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

MECHANICAL NASAL FILTER FOR TREATMENT OF INHALANT ALLERGY

All India Institute of Medical Sciences, New Delhi, has developed a mechanical nasal filter for treatment of inhalant allergy for the first time in India.

Allergic disorders can be prevented if the patient does not allow the antigen to enter into his body. In the case of allergy due to inhalants, the antigen ordinarily enters the body through the nostrils. This fact suggested that it should be possible to prevent the entry of the antigen by placing a suitable filter at the level of the nostrils. The requirements of such a filter include.

(a) Efficient filteration of the antigens suspended in the air... (b) Freedom from any other side effects and (c) Good consumetic acceptability.

Nasal filters have been constructed and the results of its use have been seen on eleven patients suffering from various types of allergic disorders. For each patient a pair of nasal filters was made by mounting the stainless steel wire gauge in a frame made of methyl methacrylate. The size of the frame was adjusted to fit inside the nostrils.

Uptill now there is no other method except medicines to prevent allergic disorder. Medicine may cause some side effects; also medicines for the long interval of times are not advisable. The advantage of the nasal filter is that after putting the pair of nasal filter inside each nostril, allergic disorder can be prevented without any medicines. But the patient has to be trained to avoid breathing through the mouth.

Consumer acceptability of the filter is fairly good as it can be worn inside the nostrils and is not visible from outside. It can be used by the persons suffering from allergic disorder caused by bronchial asthma, allergic rhinitis, urticaria, atopic decmatitis and pompholy.

The maintenance of the filter is quite simple. This is made of stable materials and therefore, can be washed with soap and water. A 12 hourly cleaning of the wire gauge with soap as a rule, prevents clogging of its pores.

In addition to the patients indicated above, a large number of persons working in textile mills, paper mills, silica plant, sugar mills, coal mines and coal washeries etc. suffer from allergic disorder. By using this nasal filter, further contact with the antigens can be prevented.

The main raw materials which go into manufacture of the nasal filter are steel wire guage and methyl methacrylate. These are available indigenously.

MICROWAVE EQUIPMENT DEVELOPED

A sophisticated wide band mircowave communication equipment with a capacity of 120 speech or digital channels is reported to have been developed by and is in production at Bharat Electronics Limited, Bangalore.

The equipment is said to be versatile and reliable. In its various forms, it can meet the requirements of various civilian and defence communication needs. Currently, the equipment is in production for supply to the Air Force for the Air Defended Ground Environment System (ADGES plan) and also for a turnkey project being executed by the Ghaziabad factory of BEL for modernising the police communication system in Tamil Nadu.

The equipment can be used for line of sight and and Troposcatter modes of operation to meet the stringent reliability and quality requirements of the services.

Microwave comunication systems are fast replacing the conventional methods. The systems provide medium to high capacity communications at economic cost.

In addition BEL, Ghaziabad, is also providing a multi-channel UHF communication link to the 1200 km. Haldia-Barauni-Kanpur pipeline on a turn key basis. Both these systems have been designed, developed and are under production in BEL. The foreign exchange component in these projects would be about 10 percent.

The other major production items of BEL, Ghaziabad, are static and mobile radars and secondary radars for the ADGES plan.

CHEMICAL TO IMPROVE PLANT YIELD

In the context of increasing polpulation and decreasing land mass for food production, the role of chemical plant nutrients assumes significance. Apart from conventional nitrogenous fertilizers, there are some other chemicals which help in controlled growth of plants and increase their yield. Cycocel is one such chemical which is eagerly sought after by agriculturalists and horticulturalists.

A process for making cycocel, a chemical improving plant yield, has been developed at the Regional Research Laboratory, Jorhat.

Cycocel whose chemical name is 2-chloroethyl trimethyl ammonium chloride is a micro nutrient. It has the effect of making the plant sturdy and also dwarfening it. On plantations like cotton, wheat, grapes, almonds, mangoes and tomatoes, cycocel increases the yield and in the case of sugarcane, it increases the quality of the juice.

The process consists in the introduction of clorine into choline chloride under controlled temperature conditions. The product produced in the laboratory has been found to be chemically pure and has been tested on citronellol cultivation. The process has been developed only on a laboratory scale.

The raw materials required are : Choline chloride, Thionyl chloride, Solvent (ether). The chlorides are said to be manufactured by a couple of firms in the country. Ether is easily available.

The important items of equipments are : jacketted reaction vessel with stirring arrangements; jacketted reaction vessel with fractionating column; jacketted reaction vessel with Condenser; Pressure filter; Refrigeration units; Boiler; Hot air drier; Pumps and other vessels. All equipment can be easily fabricated indigenously.

DIESEL ENGINES
A SPOTLIGHT

Used in increasing volume both in industrial and agricultural sectors of the Indian economy, diesel engines have assumed significance in the comprehensive range of engineering products manufactured in India. The production range mainly consists of two types of diesel engines-stationary type and mobile engines. These are presently being manufactured by large and medium scale units in India. The year 1973 witnessed the production to attain a new high of 132,000 numbers. In fact, the output rose to this level from 79,000 numbers in 1972 and 84,000 numbers in the year that preceded. In terms of value, the output during these years was of the order of Rs. 550 million (1973), Rs. 347 million (1972) and Rs. 326 million (1971).

At present, there are 31 units engaged in the production of diesel engines in India with a combined capacity of 292,200 numbers. Besides, an additional capacity to the tune 164,350 nnmbers per annum is being created; letters of intent to this effect have already been issued.

The present production is dominated by small HP range engines because of persistently growing demand for the type. Their production is mainly confined to the small scale sector. Today, about 80 per cent of the total production of diesel engines is accounted for by engines below 20 HP. Domestic demand for engines in small HP range, however, suffered a setback since 1970 resulting in sizeable decrease in the capacity utilisation. However, in recent years, it has been improved to some extent and at present it is about 50 per cent.

India has still to depend on imports of certain special types of diesel engines. During 1972-73, the imports were of the order of Rs. 6.80 million (29 numbers) as against Rs. 7.40 million (63 numbers) in 1972-73 and Rs. 3 million (80 numbers) in 1971-72.

The main raw materials that go in the manufacture of diesel engines are mild steel sheets, alloy steel bars, pig iron and seamless steel tubings. These are available indigenously. However, nickel, tin and copper, although required in small quantity, are imported. Certain categories of seamless steel tubings which are not being manufactured indigenously at present, are also imported.

For diesel engines upto 30 HP range, sufficient capacity is being created through the schemes approved so far. Taking into account growing demand for high speed light weight engines at home and abroad, the emphasis would be to create additional capacity in this line through diversification of existing units.

Diesel engines in the 30 to 100 HP range used mainly for vehicular and industrial applications are being manufactured by most of the units producing commercial vehicles. As such, creation of additional capacity in this area of manufacture solely depends upon the establishment of capacities for the production of vehicles.

Mainly used in the manufacture of medium speed marine engines, diesel engines in 75 to 150 HP range are to be manufactured by one unit having a licensed capacity of 1000 numbers as against the anticipated additional demand of about 500 numbers by 1978-79. However, the proposals for diversification into this range from existing manufacturers could be considered on merits.

Diesel engines in the range of 100 to 800 HP are used in the manufacture of heavy earth moving equipment. The demand for these by 1978-79 has been

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estimated at 2000 numbers and thus, there is need to create capacity in this range. Engines above 800 HP are used in the equipment for power generation and ships.

Indigenous know-how is available in India for the manufacture of low and medium HP diesel engines. However, for those in high HP range and in respect of high speed light diesel engines of latest designs, proposals for foreign collaboraton can be considered on merits.

Indian diesel engines are sought after in growing volume in international markets. During 1973-74, diesel engines and parts secured foreign exchange at a value of Rs. 90.50 million. A variety of diesel engines appeared in India's export trade during the year. The range of export included vertical and horizontal engines, marine and stationary engines of different Horse Power and engines and parts for motor vehicles.

In the total export realisation, stationary diesel engines (vertical) accounted for the bulk of foreign exchange at about Rs. 38 million while the parts earned as much as Rs. 30.65 million. Saudi Arabia, Iran, Philippines, Iray, Indonesia and Syria were the principal customers for these engines while for diesel engine parts, Federal Republic of Germany at Rs. 9.77 million was the principal importer. Among oth[illegible] Iran, Bangladesh, Philippines, Sau[illegible] Arabia, Sudan, Syria and Thailand.

Besides these, vertical stationary diesel engines, horizantal diesel engines (stationary type) earned Rs. 3.20 million. These were mainly bought by Saudi Arabia, Iran, Iraq, Kuwait, Libya, Syria and Afghanistan. Marine diesel engines and parts (vertical and horizontal) and diesel engines for motor vehicles and parts also figured in exports. ☐

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BITUMEN EXPORT TO IRAN

India is to earn Rs. 250 million through exports of 300,000 tonnes of bitumen to Iran. Indian supplies to Iran will be phased over a 21-month period commencing from January 1975. M/s. Indian Oil Corporation Limited, which has received the order, is exploring further possibilities of exporting bitumen to other countries in West Asia. This year, it has already exported 10,000 tonnes of bitumen to Indonesia.

Besides bitumen, Naphtha is another export product of Indian Oil. The firm has already exported 125,000 tonnes of the product to Japan at a value of Rs. 130 million. During the current year, the firm's overseas supply of bitumen, naphtha and of aviation fuels to foreign airlines and bunker oil to foreign vessels is estimated to secure Rs. 1000 million in foreign exchange. The Naphtha exports are effected only after taking into consideration the indigenous demands of the fertiliser plants in the country.

Indian Oil has already taken steps to save sizeable amount of foreign exchange by way of curbing consumption of fuel oil which is imported. It has set up fuel efficiency service in collaboration with the National Productivity Council and the Directorate General of Technical Development (DGTD) at the industrial centres, namely, Bombay, Calcutta and Coimbatore. A target of 15 per cent saving on fuel oil consumption has been set in this respect.

ROAD MOTOR VEHICLES IN EXPORT TRADE

Automobile industry constitutes a prominent sector of India's engineering industry in the context of export trade. India-made road motor vehicles secured Rs. 150 million in foreign exchange in 1973-74. Of this, buses (assembled or otherwise) constituted a sizeable item of export growth. These were supplied to foreign markets at Rs. 19.20 million. The other allied products, namely, lorries and trucks fetched still more at Rs. 20.10 million. Of other categories in the group of road motor vehicles, motor vehicle bodies, chassis, frames and accessories were the most prominent in the export trade. Their export earning during the year amounted to Rs. 83.70 million.

Contributing to the export drive in the line, M/s. Ashok Leyland (Ennore, Madras) have already booked export orders worth Rs. 140 million in the current year, including the latest order for 500 Comet buses to Zaire. Orders in hand include those from Afghanistan, Nigeria, Oman, Sudan, Sri Lanka, Uganda, West Indies and Zambia.

Besides appreciable export performance, the Madras firm has been successfully catering to the home demand for different brands of chassis for vehicles and automobile accessories as also diesel engines. Despite production constraints, the output of Comets grew by over 2,000 chassis in 1973-74. Sales of spares were also up by about 14 per cent of the preceding year.

India's automobile industry has developed technical expertise and know-how to manufacture a variety of commercial vehicles catering to rapidly changing requirements of users at home and abroad. The broad range of manufactures, today, includes trucks, buses, lorries, motor cars, jeeps, scooters, tractors and almost a complete range of ancillaries and parts. Production of the industry is also rising year after year. The output of commercial vehicles rose to about 42,400 numbers in 1973 from 37,460 numbers in 1972 while production of jeeps improved to 13,070 numbers from 12,590 numbers. Similarly, the output of scooters, motor cycles and mopeds was up at 150,000 numbers in 1973 compared to 133,500 numbers in the preceding year.

AGARBATTIS IN EXPORT TRADE

From Rs. 15.85 million in 1972-73, the export earning of agarbattis (incense sticks) improved to nearly Rs. 19.20 million in 1973-74. In fact, it is one of the products in the group of chemicals which has revealed consistent uptrend in recent years in the export value : Rs. 10 million in 1969-70, Rs. 12.75 million in 1970-71 and Rs. 14.10 million in 1971-72.

Among a large number of countries that bought agarbattis during 1973-74, U.S.A. with an intake worth Rs. 4 million was the leading buyer. Singapore which bought worth Rs. 1.84 million was the next best purchaser, followed by Nigeria at Rs. 1.20 million, Ethiopia at Rs. 1.32 million and UK at Rs. 1.26 million. Among other destinations, Saudi Arabia, Iraq, Netherlands, Nepal, Malaysia, Kenya, Federal Republic of Germany and France were significant.

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Contributing to the over all export of the product, M/s. Mysore Sugandhi Dhoop Factory Pvt. Ltd., (Commercial Chambers, Bombay), an established agarbatti manufacturing firm stepped up its exports to the tune of Rs. 3 million in 1973-74 from Rs. 2.5 million in 1972-73, Rs. 2 million in 1971-72 and only Rs. 1.2 million in 1970-71. The export performance of the firm for 1973-74, represents over 75 per cent of its entire production for the year.

The firm has been in the forefront in the context of exports and has been making sustained efforts to capture foreign markets. Creditably, they received export awards successively for three years for their outstanding export performance from the Basic Chemicals, Pharmaceuticals and Cosmetics Export Promotion Council, Bombay. The firm has developed agarbattis of various aromas and packing specifications to suit the specific requirements of overseas consumers.

BATTERIES PICK-UP OVERSEAS DEMAND

India—made batteries and accumulators are gradually picking up in overseas demand. Their export attained a level of about Rs. 30.30 million in 1973-74 against Rs. 25.57 million in 1971-72 and Rs. 28.40 million in 1972-73.

Of the total export value in 1973-74, flash light batteries which were supplied mainly to Sudan, South Yemen Republic, Nepal and Czechoslovakia, fetched Rs. 3.28 million. Other dry-cell primary batteries which secured Rs. 6.27 million in foreign exchange were primarily sold to Sudan and Nepal. Wet cell primary batteries were supplied to Poland, Kuwait, Saudi Arabia and Nepal to earn Rs. 0.87 million. Lead accumulators (acid type) were principally exported to U.S.S.R., Poland, Bahrein Islands and Saudi Arabia and earned over Rs. 9.50 million.

Contributing to the export effort in the line, M/s. Union Carbide India Ltd. (Middleton Street, Calcutta-16), earned Rs. 15.00 million in foreign exchange last year. The annual turnover of the batteries manufactured by the Calcutta firm amounted to Rs. 350 million against an annual capacity of the order of Rs. 400 million.

The firm's battery plants are located at Calcutta, Madras and Hyderabad. Their diversified product range includes several types of batteries and dry cells for radio and tele-communication purposes, processed and rolled zinc, Eveready flashlight cases, cinema arc carbon and midget electrodes, industrial chemicals and polyethylene resins. Lately, the firm has introduced yet another dry cell battery, known as "Eveready double action 955" which could be used both for flashlights and transistors. Besides being economical, the new battery could be depended upon against leakage because of its poly—laminated jacket.

In the organised sector, actual production of dry batteries (inclusive of torch cells) totalled 680 million cells in 1973 against an installed capacity of 1230 million cells spread over 12 units. In the same year, installed capacity of 1.3 million numbers of storage batteries was shared by 6 units in the line and their actual production was recorded at 1.28 million numbers. The utilisation of capacity in this sector is over 90 per cent while in case of dry batteries, it is slightly over 50 per cent. Imports of both dry and storage batteries are not permitted.

EXPORT PERFORMANCE AND POTENTIAL

INDO-PAKISTAN TRADE PROSPECTS

Pursuant to the visit of a Pakistan delegation led by the Secretary to the Government of Pakistan, Ministry of Commerce, a Protocol was signed between India and Pakistan providing for resumption of trade effective from December 7, 1974. It was agreed to conclude a comprehensive trade agreement for which purpose a delegation from India is to visit Pakistan in the first week of January, 1975.

The trade between the two countries would be in convertible currency and to begin with, generally on a Government to Government basis or through Government-controlled trade corporations of the two countries. The trade would be on the basis of the Most-Favoured-Nation treatment in accordance with the provisions of the General Agreement on Tarriffs and Trade (GATT).

The Protocol noted the immediate possibilities of commencing trade in the specified items, namely, cotton, engineering goods, jute manufactures, iron ore, railway equipment, rice and tea.

Keeping in view the importance of immediate restoration of direct shipping services between the two countries for facilitating the movement of goods and trade, it was agreed that experts of the two countries should meet in the current month to work out details in this regard. The Protocol stated that discussions would be likewise arranged for the restoration of their rail links to serve mutual trade.

The Protocol recalled the provisions of the Simla Agreement (1972) to progressively restore and normalise relations between the two countries and re-affirmed the desire of the two Governments for resumption of trade and Cooperation in economic and other agreed fields.

TRADE WITH SOUTH KOREA

India's export trade with the Korea Republic totalled Rs 60.30 million during 1973-74. In the same year, Indian imports from that country amounted to Rs. 2.5 million. The position of mutual trade in 1972-73 was different - Indian exports to the Korean Republic amounted to Rs. 12.6 million while her imports therefrom were of the order of Rs. 71.9 million. During 1972-73 the major items exported by India were jute manufactures (Rs. 4.8 million), salt (Rs. 1.7 million), human hair (Rs. 1.2 million), mica, natural gums and resins, cashew shell oil and non-electric machinery. Indian imports from the Korean Republic in that year mainly related to fertilizers (about Rs. 30 million). In the first three quarters of the subsequent year 1973-74 (April-December 1973) Indian supplies included railway equipment (Rs. 19.7 million), iron ore (Rs. 11.5 million), pig iron, manganese ore and concentrates, mulberry silk waste and common salt. Indian imports from South Korea during this period mainly related to peppermint oil, organic chemicals, iron and steel and metal manufactures.

The Government of India and the Republic of Korea concluded a Trade Arrangement in 1964 through exchange of letters. In order to widen commercial and economic relations, the status of the Trade Arrangement was raised to that of a Trade Agreement which was signed in August 1974. The Agreement provided for maximization of trade between the two countries according to Most-Favoured-Nation Treatment to each other and for promotion of technical collaboration for economic development in both the countries.

The South Korean market for India's engineering exports has been fluctuating. India was able to export railway wagons and rails when the railway expansion programme in that country was underway. The programme of modernisation of the textile clothing industries in that country has now offered opportunities for Indian supplies of textile and textile machinery. South Korea has also evinced interest in India's pump-sets, telecommunication equipment, typewriters and office equipment.

Already, India has concluded contracts for supply to Korea of textile machinery worth about Rs. 160 million.

A recent sizeable contract secured by India from South Korea was for the construction of a viscose staple fibre plant worth about Rs. 55 million. The machinery and plant equipment is also to be supplied by India.

TRADE PROTOCOL WITH RUMANIA

India and Rumania have recently concluded a Trade Protocol for 1975 under which a trade turnover of Rs. 1130 million has been envisaged between the two countries.

Under the Protocol, items to be exported from India to Rumania include iron ore, tea, coffee, jute manufactures, black pepper, oil cakes, tanned and semi-tanned hides and skins, cotton textiles, drugs and pharmaceuticals, machine and hand tools, diesel engines, automobile ancillaries, wire ropes and railway components like automatic couplers, bogie castings and forgings.

India's imports from Rumania will include chemical fertilisers, oil prospecting and drilling equipment, rolled steel and steel products, electronic and television components, lubricating oils and organic and inorganic chemicals.

The Indo-Rumanian Trade Plan for the year 1974 provided for a turnover of Rs. 900 million (Rs. 450 million each way). The total trade turn-over between the two countries was of the order of about Rs. 290 million in 1973-74. Of this India's exports accounted for nearly Rs. 152 million while her imports from Rumania totalled Rs. 138 million.

EXPORT REVIEW OF MARINE PRODUCTS

Marine products constitute an important foreign exchange earner for India. During 1973-74, a quantity of 52,280 tonnes valued at Rs. 895 million was exported. During the first half of 1974-75, the export quantum was of the order of 22,710 tonnes at a value of Rs. 346.40 million. An export target of Rs. 915 million has been fixed for the full year 1974-75.

Japan, United States of America, West European countries like France, Belgium, Italy, United Kingdom, Federal Republic of Germany, Netherlands, Denmark as well as Australia have been the major markets for export of sea foods in fresh, frozen and chilled form. Sri Lanka has been the major market for dried fish.

Export earnings from marine products grew from a meagre Rs. 40 million in 1961-62 to the neighbourhood of Rs. 900 million in 1973-74. A target of Rs. 1500 million has been proposed for 1978-79. To be able to attain this level of foreign exchange earning, the Fifth Five Year Plan envisages certain schemes including introduction of deep sea trawlers and modernisation of fishing boats, development of fishing ports and harbours, refrigerated godowns and transport as well as modernisation of processing facilities and diversification of exported products.

So far, India has been concentrating on exports of shrimps mainly. In order to create markets and diversify the range of export products, the Marine Products Export Development Authority has plans on hand. The Authority organised a Sea Food Fair in November 1973 at Bombay and plans to organise another fair at Cochin in February 1975. These fairs are to provide first hand impression to the visiting importers and processors from abroad about the range of products that India can offer. An important product which is available in abundance in Indian seas but has not been able to make much breakthrough in the world markets is canned sardine.

Total marine fish landings in India are estimated to be of the order of 1.23 million tonnes (1973) while the estimated inland fish landings totalled in the year about 0.78 million tonnes. Thus the total fish landings in India were placed at over 2 million tonnes in the year 1973.

By 1951, there were only nine mechanised boats in operation in the country. The number has now gone up to 9300 besides 80 medium fishing vessels. The Fifth Five Year Plan envisages the introduction of 4750 mechanised boats and 200 medium and large fishing vessels. As a result of the various developmental measures, the fish production is likely to have increased from 1.96 million tonnes at the end of 1973 to 2.8 million tonnes now.

Besides improving the fish production, several other measures have been taken to effect better productivity for the fishing units in operation. For instance, infrastructural facilities for landing and berthing, repairs and servicing of mechanised boats and fishing vessels, cold storage and modern processing amenities and so on are being provided to the fishing processors. The internal marketing system is being geared up for a more efficient handling of fish so as to avoid wastage. A central cold chain grid with regional cold chain schemes at the State level is being introduced for improving the marketing of fish. Increased production of fish as well as increased productivity per boat through better infrastructural facilities, diversification of products and organisation of fish marketing systems within the country for the non-exportable varieties would enable the exporters to put in the world market wholesome products at competitive prices.

EXPORT TRADE IN RICE

Mainly to the Gulf countries, U.K., Singapore, Hong Kong and Japan, India's export trade in rice fetched an amount of Rs. 66.82 million in 1973-74 for a quantity of 14,820 tonnes. During 1972-73, the quantity of rice exported was 22,920 tonnes to fetch a value of Rs. 37.7 million. During April–October, 1974 the quantity exported was of the order of 16,372 tonnes. (Rs. 96.66 million).

The average f.o.b. unit rate realisation per metric tonne was Rs. 4511 during 1973-74 as compared to Rs. 1645 million in 1972-73. It was, in fact, higher at Rs. 5965 per tonne during 1974-75 (upto October 1974). In view of the handsome export earning, the Government of India have been encouraging the export of superior quality of basmati rice, though in small quantities. Export of the order 25000 tonnes would not have any impact on the availability or price levels of rice in the internal market in the context of the country's annual production of over 40 million tonnes. The production of basmati rice is confined to the States of Punjab, Haryana and Uttar Pradesh. To meet the foreign demand as also the domestic requirement, its production is sought to be stepped up to the extent of 200,000 tonnes annually as against an estimated 60,000 tonnes per year now.

Export of basmati rice is canalised through the State Trading Corporation of India. Till the last year (1973-74), there was a ceiling fixed for its export (30,000 tonnes in that year). There will, however, be no quantitative restriction on the export during 1974-75, although it would be ensured that no impact would be made upon price of basmati rice as a result of the export. As it is, the export of basmati rice has no adverse impact on the availability of foodgrains in the country. With export of one tonne of this variety of rice, it is possible for the country to not only earn more foreign exchange but to import about four tonnes of ordinary rice or wheat.

During 1973-74, the major destination of basmati rice was Bahrein Islands at a quantity of 6942 tonnes to fetch Rs. 33.5 million. Dubai was the next best importer at 3000 tonnes valued at Rs. 16.2 million. Qatar and Kuwait imported 1,000 tonnes and 1034 tonnes at a value of Rs. 4.44 million and Rs. 3.17 million respectively. While the total export of rice to Gulf countries amounted to 11,976 tonnes valued at Rs. 57.28 million, the export of other countries in the year totalled 2846 tonnes at a value of Rs. 9.53 million.

IRON AND STEEL EXPORTS UP

The export value of iron and steel manufactures from India during 1973-74 amounted to Rs. 580 million, being higher by about Rs. 162 million compared to Rs. 418 million in the precedingy year. Four specific categories of these products have particularly revealed signs of export dynamism, viz. steel tubes and pipes, rails and railway track construction material, pig iron as well as universals and plates and sheets of iron and steel.

The export value of steel tubes and pipes more than doubled to nearly Rs. 243 million in 1973-74 from Rs. 112 million in the preceding year. Earlier also steel tubes, pipes and fittings has been a consistent area of export expansion notwithstanding the general decline in the iron and steel products export trade. Their earning was of the order of Rs. 106.6 million in 1970-71 and nearly Rs. 10.8 million in 1971-72. Of the total export realisation (Rs. 243 million) in 1973-74, cast iron pipes and tubes were exported at a value of Rs. 20.40 million. Of this, soil pipes alone fetched Rs. 18.23 million, mainly from Singapore, Hong Kong, Kenya, Malaysia, Saudi Arabia and U.S.A. Galvanised tubes and pipes (other than cast iron) earned Rs. 157 million in foreign exchange. The major markets were Saudi Arabia (Rs. 22.35 million), Dubai (Rs. 17 million), Iraq (Rs. 16.96 million), U.K. (Rs. 14.43 million), Qatar (Rs. 9.72 million), Abu Dhabi (Rs. 9.16 million), Kuwait (Rs. 8.16 million), Iran (Rs. 6.76 million), U.S.A. (Rs. 6 54 million), Muscat (Rs. 5.52 million) and Federal Rupublic of Germany (Rs. 4.98 million). Non-galvanised tubes and pipes (other than cast iron) were also in demand overseas and secured about Rs. 28.60 million. Iran, Jordan, Saudi Arabia, U.K. U.S.A. and Nigeria were the major export destinations.

Rails and railway track construction material which suffered a sharp decline in their export supplies in 1972-73 at Rs. 12 million compared to Rs. 88 million in 1971-72, also registered a recovery in export performance in 1973-74 to attain a level of Rs. 34.25 million. The 1973-74 performance was thus nearly 3 times of the exports in 1972-73, though still appreciably less in comparison to 1971-72. Of the total export realisation of the group, rails of iron and steel, supplied to Republic of Korea and Iran, accounted for as much as Rs. 28.14 million. The share of sleepers and other railway track materials of iron and steel was nearly Rs. 6.11 million, Bangladesh being the major buyer.

Pig iron, sponge iron and iron and steel powders also fared well on the export front in 1973-74, having netted Rs. 215 million in foreign exchange in comparison to Rs. 203.15 million in the preceding year. The soviet Union, followed by Japan, was the best customer for pig iron including cast. Out of a total export value of this product at Rs. 172.53 million in 1973-74, the Soviet Union purchased worth Rs. 78.33 million and Japan Rs. 67.94 million. Ferro Manganese was another area of export growth. During the year, it earned Rs. 30.84 million of which U.S.A., imported worth Rs. 13 million and Japan Rs. 10 million. The foreign exchange earning of other ferro alloys including ferro chrome and ferro silicon was limited to Rs. 11.38 million. U.S.A. was the principal market for ferro silicon while ferro chrome was supplied mainly to Australia and Netherlands. The export earning of iron and steel powders was negligible during the year.

The overseas supplies of universals, plates and sheets of iron and steel in 1973-74, though limited to Rs. 6 million, also revealed an uptrend compared to Rs. 4.45 million in the preceding year. During 1973-74, Iron and steel coated plates and sheets below 3 m.m. alone contributed Rs. 4.84 million to the total export earning of the group. Bangladesh and Nepal were the major destinations.

Steel ingots and other primary forms constituted yet one more area of export uptrend in 1973-74. This netted Rs. 12 million against Rs. 11.84 million in the preceding year. The major buyers in this line included Bangladesh, Nepal and Malaysia.

Iron and steel bars, rods, angles, shapes and sections constituted the only major category of steel products which suffered a setback in 1973-74. Their export value was less at Rs. 63.87 million against Rs. 71.82 million in 1972-73. In 1973-74, bars and rods were the main items of export earning in this group. These earned as much as Rs. 54.80 million. Iran, Saudi Arabia, Thailand, Dubai, Sudan and U.S.A. were the major buying countries.

INCREASE IN CASHEW EXPORTS

India's exports trade in cashew kernels registered improvement by about 30.7 percent in terms of value during the first nine months of 1974 over the export performance during the corresponding period of the preceding year. The exports improved to Rs. 765.10 million from Rs. 585.30 million. In terms of quantity the exports, however, came down to 40,862 tonnes from 46,244 tonnes, according to The Cashew Export Promotion Council, Ernakulam, Cochin.

Happily, this export performance even exceeded the total export value earned during the full year of

1973 at Rs. 753 million. The increase in the export realisation during the period under review was mainly attributed to better unit value realisation at Rs. 18.72 per kilogram during the period as against Rs. 12.66 per kilogram in the same period of the preceding year. The fall in the quantum of cashew exports during the period may be attibuted to low offtake by major buying countries like USA, UK, Japan and Canada.

The quantumwise break-up of exports during the period indicates that USSR was the largest buyer of Indian cashew having impoted nearly half of the total Indian supplies—19745 tonnes out of the total of 40862 tonnes. This intake was also more than its purchases during January-September 1973 at 17,038 tonnes. Though USA occupied the place of second significant purchaser at 10,016 tonnes, its imports declined sizeably as compared to 15,971 tonnes (January-September 1973). Canada also reduced its imports to 3282 tonnes from 3520 tonnes while Japan bought less at 1233 tonnes against 2593 tonnes. Australia improved its intake to 1508 tonnes from 844 tonnes while Hong Kong purchased more at 686 tonnes against 543 tonnes. Netherlands, UK, Federal Republic of Germany, German Democratic Republic and Czechoslovakia were the other destinations which reduced their intake during the period.

A similar trend was noticed in the export of cashew shell liquid also. Valuewise, the exports rose to Rs. 7.20 million (January-September 1974) from nearly Rs. 4 million in the same period of the preceding year. The export quantum during the respective periods, however, was almost the same-3347 tonnes against 3462 tonnes, indicating more unit value realisation.

COIR PRODUCTS FETCH MORE

India's exports of coir and coir products improved to Rs. 95.40 million during the first seven months of 1974-75 (April-October 1974) from Rs. 77.85 million in the same period of the preceding year. Quantumwise, 233,613 quintals against 234,963 quintals were supplied abroad during the periods under review.

Coir yarn continued to be the major item of sizeable export expansion during the period, having secured increased foreign exchange earnings at Rs. 40.85 million (128,064 quintals) as compared to Rs. 37.88 million (137,790 quintals) in April-October 1973. Coir mats also continued to be the second significant export item. It earned Rs. 38.83 million (69,462 quintals) as against Rs. 32.62 million (73,154 quintals). Coir matting exports also looked up to Rs. 9.37 million (20,041 quintals) from Rs. 5.40 million (14,165 quintals). Coir rug and carpet exports registered more than six-fold increase to Rs. 5.30 million (9938 quintals) from only Rs. 0.86 million (2188 quintals).

Among other coir products, exports of coir ropes improved to Rs. 0.15 million from Rs. 94,554 coir fibre to Rs. 0.10 million from Rs. 92,132 and rubbrised coir goods to Rs. 8780 from Rs. 7368. Curled coir was the sole item the exports of which fell to Rs. 0.58 million from its earlier level of Rs. 0.83 million.

BOOST IN EXPORT OF COTTON TEXTILES

Indian cotton textiles are in wide demand abroad. The exports of cotton textiles falling under the purview of the Cotton Textiles Export Promotion Council, Bombay, earned Rs. 1346.75 million during the first half of 1974-75 (April-September 1974) as against Rs. 998.55 million in the same period of 1973-74. The export target for the full year of 1974-75 has been set at Rs. 2250 million.

All the categories of cotton fabrics falling under the purview of the Council registered sizeable increase in terms of value in their overseas offtake during the period under review. For example, cotton piecegoods which constituted the most leading item in the overall exports, secured as much as Rs. 709.80 million as against Rs. 649.75 million. However, in terms of quantity, the exports came down to 210 million square metres from their preceding year's (April-September 1974) level of 306.70 million square metres. Thus, the increase in terms of value was evident mainly because of better unit value realisation during the period-Rs. 3.38 per square metre against Rs. 2.12 per square metre. U K., USSR, USA, Iran, Canada, Sudan, Hong Kong, Japan, Malaysia, Singapore and Gulf countries were the prinicipal importing countries.

Apparel was the next best active item. It fetched Rs. 326.55 million against Rs. 158.85 million. USA's offtake was worth Rs. 58 80 million against Rs. 21.60 million. UK was the next best market at Rs. 41.60 million. Japan and Australia both continued to evince keen interest in Indian apparel. Besides these, Federal Republic of Germany, France, Sudan, Italy and USSR were the other prominent markets. Exports of cotton yarn also earned more foreign exchange earning at Rs. 71 million (4.7 million kgs.) compared to Rs. 48.10 million (4.5 million kgs.). UK, Czechoslovakia, Japan and Hong Kong were the major buyers. Cotton hosiery exports registered three-fold increase to Rs. 18.40 million from Rs. 6.10 million. U.S.A., France and Federal Republic of Germany constituted the leading markets. Italy, Canada and Netherlands were among other markets.

Exports of cotton manufactures rose sharply to Rs. 220.90 million from their preceding year's level of Rs. 135.70 million. The spurt in demand for Indian made-ups resulted mainly because of declined output of made-ups in the west European countries owing to high cost of production. In the range of made-ups exported, towels, bed sheets, pillow cases and sewing threads have shown remarkable increase while exports of handkerchiefs declined despite a sizeable potential for the item abroad.

KEEN DEMAND FOR INDIAN JEWELLERY ABROAD

The consistent increase in exports of gems and jewellery from India in recent years indicates its growing popularity abroad. During the two year period, 1971-72 to 1973-74, the exports have more than doubled—from Rs. 489.60 million in 1971-72 to Rs. 1050.50 million in 1973-74.

Diamonds continue to be the largest foreign exchange earning item. During 1973-74, these secured Rs. 861.60 million as against Rs. 589.60 million in 1972-73. Similarly, exports of precious and semi-precious stones rose by 50 per cent to Rs. 155.70 million from Rs. 104.60 million. Imitation jewellery exports also jumped to Rs. 20.80 million from Rs. 8.67 million, registering a growth rate of more than 150 percent.

In recent years, the trend in exports of diamonds has been witnessing change—exports to consuming countries like USA and Japan are growing at a fast rate while to distributing countries like Hong Kong and Belgium, these are gradually declining. During 1973-74, USA emerged as the topmost buyer of Indian diamonds. Japan also more than doubled its intake during 1973-74 as compared to its purchases in the preceding year. Apart from these markets, there is a sizeable scope for stepping up exports to Federal Republic of Germany.

TREND IN COFFEE EXPORTS

India earned Rs. 460 million in foreign exchange by exporting about 52,690 tonnes of coffee during 1973-74. In 1972-73 the export value was over Rs. 329 million (50,860 tonnes) while in 1971-72, it was about Rs. 221 million (35,700 tonnes) and Rs. 251 million (32,190 tonnes) in 1970-71. India's production of coffee was of the order of 85,500 tonnes in 1973-74, 91,000 tonnes in 1972-73, 68,950 tonnes in 1971-72 and 110,230 tonnes in 1970-71.

It is envisaged that the exports during 1974-75 would amount to 53,000 tonnes valued at Rs. 500 million. By

Correction : The figure Rs. 7.5 million in para 1 of the item 'Electronic Products For Export', appearing at Page 2 of this weekly's Issue No. 48 (Vol. IV) dated November 30, 1974, may be read as Rs. 75 million.

the end of 1978-79, the export quantum is targetted to reach 67,630 tonnes. The present area under coffee is around 140,000 hectares. It is felt that there is considerable scope for expansion of production not only by increase in acreage but also by intensive cultivation. An area to the extent of 10,000 hectares is expected to be possibly brought under coffee in the hilly tracts of Andhra Pradesh, Orissa, Assam and other North Eastern hill states. In the Fifth Five Year Plan, production of coffee is estimated to be of the order of 114,000 tonnes by the year 1978-79 as compared to an estimated 96,700 tonnes in the year 1974-75.

Coffee allocation for export is currently sold periodically in open auctions, held normally once in a fortnight. Exporters of coffee who are registered with the Coffee Board, Bangalore, are allowed to participate in these auctions. Exporters are supplied with pre-auction samples to enable them to send the same to their prospective buyers abroad and obtain quotations.

In addition to private exports, Coffee Board has also commenced direct export sales or sales through the State Trading Corporation of India. In 1973, the Board's direct sales amounted to 8620 tonnes at a value of Rs. 72 million. In 1974, the quantum sold was 15,765 tonnes valued at nearly Rs. 180 million.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

INDIA'S ECONOMIC REVIEW

Quick estimates of the Central Statistical Organisation, Government of India, have shown that India's Gross National Product at current prices stood at Rs. 414,610 million during 1972-73 while the Net National Product in the same year was of the order of Rs. 389,210 million at current prices. The Gross and Net National Products were estimated at Rs. 380,730 million and Rs. 357,560 million in 1971-72; Rs. 360,460 million and Rs. 339,460 million in 1970-71; Rs. 218,560 million and Rs. 206,240 million in 1965-66; and Rs. 140,070 million and Rs. 132,790 million in 1960-61, respectively.

The per capita Net National Product was estimated at Rs. 687.6 in 1972-73, Rs. 654.4 in 1971-72, Rs. 627.5 in 1970-71, Rs. 425.2 in 1965-66 and Rs. 306 in 1960-61.

At 1960-61 prices, the Gross National Product was estimated at Rs. 205,980 million, the Net National Product at Rs. 191,010 million and per capita national product at Rs. 337.5 in 1972-73. During 1971-72 the figures were Rs. 204,660 million, Rs. 190,330 million and Rs. 343.6, respectively.

Estimated population of India by mid-1973 was 574 million as compared to 562 million in 1972. The birth rate was 36.6 per thousand and the death rate was 16.9 per thousand mid (1972).

Industrial production of the country rose by 1.3 per cent and 3.7 per cent in June 1974 compared to the corresponding month in 1972 and 1973 respectively. The production index in June 1974 stood at 199.3 (1960 = 100). The June 1974 index showed a rise of 2.5 points and 7.1 points over the corresponding months of 1972 and 1973 respectively.

Electricity generated during 1973 was of a monthly average of 5,527 million kwh. This comprises 2874 million kwh of electricity generated by steam plants, 2170 million kwh generated by hydro-plants, 172 million kwh generated by nuclear plants, 30 million kwh by gas plants and 9 million kwh by oil plants.

The monthly average of the production of coal during 1973 was 6.4 million tonnes; the same for crude petroleum was of the order of 600,000 tonnes. The actual production of coal in July 1974 stood at 6.93 million tonnes while that of crude petroleum in the same month was 635,000 tonnes.

Iron ore production was at a monthly average of 2.8 million tonnes during 1973. But in July 1974, it was of the order of 2 million tonnes only. Manganese ore production whose monthly average was 118,000 tonnes in 1973 was 111,000 tonnes in July 1974.

The monthly manufacturing average of cotton yarn was 83,200 tonnes in 1973 but it improved to 88,200 tonnes in August, 1974. The monthly average of cloth production of coarse, medium, fine and superfine varieties as well as the output of decentralised sector totalled 648 million meters in 1973 while in March 1974, the production was 701 million metres.

The monthly average production of basic metal industries also revealed interesting trends. The average for pig iron was 614,000 tonnes in 1973 while it came down to 575,000 tonnes in March 1974. The monthly average production of steel ingots was 608,000 tonnes in 1973 and 457,000 tonnes in March 1974. However, the monthly output of finished steel in 1973 was only 399,000 tonnes but it increased to 478,000 tonnes in March 1974. Likewise, there was improvement in respect of transmission line towers and steel structurals. Compared to June 1973 production level, the output of ball bearings, tractors, sewing machines, machine tools, sugar mill machinery and storage batteries improved in June 1974, according to the Central Statistical Organisation.

The Reserve Bank of India has reported that money supply with the Indian public declined to Rs. 109,010 million during September 1974, from Rs. 110,530 million in August 1974, Rs. 113,086 million in July 1974 and Rs. 113,952 million in June 1974. In September 1973, it was only Rs. 98,205 million.

The money supply in September 1974 comprised 61,078 million worth of currency with the public and approximately Rs. 47,936 million worth of deposit money with the public.

Foreign exchange reserves were of the order of Rs. 9470.20 million during 1973-74 as against Rs. 8463 million in 1972-73. During 1973-74, the share of gold in the total foreign exchange reserves was worth Rs. 1825.30 million, SDRs (Special Drawing Rights) worth Rs. 1837 million and Rs. 5807.8 million worth actual foreign exchange. In September, 1974, the total foreign exchange reserves were estimated at Rs. 9781.10 million comprising Rs. 1825.30 million worth of gold, Rs. 1818.50 million worth of SDRs and Rs. 6137 million worth of foreign exchange.

MILLION TONNES OF ADDITIONAL INDIGENOUS OIL

India's recent endeavour to tap oil from indigenous resources has proved fruitful. By mid-1976, the first stage of production from the Bombay High Structure is estimated to yield about one million tonnes of oil per annum.

While completion of the Bombay High structure and full development of the oil field would have taken several years, M/s. Oil and Natural Gas Commission of India, (ONGC) have been successful in setting up the first stage of production at the structure.

Claimed to be the biggest discovery in the field of oil exploration so far in India, the recent step is expected to lead India towards self-sufficiency. It is stated that the yield of oil from the off-shore wells is larger in quantity than the best of India's on-shore wells. With a view to enable ONGC to accelerate the tempo of oil exploration at the Bombay High Structure, the Indian government has empowered it to hire a drilling vessel and to acquire simultaneously two more drilling ships. Thus, the off-shore drilling fleet of ONGC is estimated to consist of three ships shortly (the first drilling vessel was, Sagar Samrat).

The Oil and Natural Gas Commission, at present, is engaged in drilling at 19 sites on land. Of these, 12 places are in Gujarat, 3 places in Assam and one place each in Tripura, Pondicherry, Rajasthan and on Bombay high.

The twelve places in Gujarat are, namely, Ankaleshwar, Ahmedabad, Kalol, Galodhra. Petroj, Nawagam, Dholka North, Surkhey, Khambel, Wara, North Khadi and Sobhasan; three place in Assam are Lakwa, Galeki and Anguri. Besides, drilling is being carried on at Baramura in Tripura, Karaikal in Pondicherry and Sumarwali in Rajasthan and at Bombay high in Maharashtra.

M/s. Oil India Limited (OIL) is also engaged in oil exploration in Naharkatiya, Hugrijan, Dum Dum areas and at Khurseong. ONGC has completed drilling at 1117 wells on land and in the off-shore areas and discovered 108.66 million tonnes of initially recoverable reserves and over 25,000 cubic metres of natural gas upto September 1974. Since its inception, the Commission has produced 33/45 million tonnes of crude while OIL has drilled 322 wells so far and produced 31.3 million tonnes of crude untill September 1974. The estimated reserves of crude oil on January 1, 1974 were 37.49 million tonnes.

India's fuel policy in general aims at reducing imports of crude and fuel products by exploration of indigenous crude in growing volume and ensuring smooth and steady supply of these materials, emanating from external sources.

ON REFRACTORY INDUSTRY

Mainly utilised by steel Industry and certain important consuming Industries, refractories have come to occupy a significant place in India. The industry has been included in the list of 123 sectors in which additional capacity is required to be created owing to persistently growing demand. The capacity utilisation in this Industry is around 75 per cent at present, while attempts are under way to enhance the same.

The total output of refractories in India is estimated at Rs. 400 million. With creation of additional capacity the output by the end of the Fifth Five Year Plan (1978-79) is estimated to go up to about Rs. 550 million. An investment to the tune of Rs. 300 million has been estimated for building additional capacity, excluding a foreign exchange content of Rs. 20 million for import of plant and equipment.

There are 48 units engaged in the production of refractories in the large scale sector and combined installed capacity is of the order of 1.23 million tonnes. Of these, 14 units cater to the requirements of steel industry (installed capacity 770,000 tonnes) and account for 65 percent of the total capacity. The total capacity required at the end of the Fifth Plan has been estimated at 206,000 tonnes.

The refractory industry broadly manufactures three types : fire clay, silica and basic refractories. The total domestic demand for these was set at about 990,000 tonnes for the year 1973-74. As steel sector is the principal user of these refractories, its demand for the year was assessed at the maximum at 718,000 tonnes and the rest by other consuming industries. The Industry has by now acquired technology to manufacture a variety of refractories. Barring a few specialised types, almost the entire range of refractories is manufactured by the indigenous industry. Interestingly, the equipment which had been imported from abroad a decade ago is now being manufactured indigenously. It is hoped that within a couple of years, the entire equipment can be produced indigenously.

The industry is striving hard to turn out newer varieties of refractories with better quality taking into account the growing needs of steel industry and other consuming industries. Two research laboratories, namely including Central Glass and Ceramics Research Institute are engaged in undertaking research activities in the field. One more Refractory Research Institute is also proposed to be set up.

IMPORT SUBSTITUTION IN HEAVY ENGINEERING EQUIPMENT

M/s. Heavy Engineering Corporation (HEC), Ranchi (Bihar), the public sector undertaking engaged in the manufacture of heavy engineering equipment, have succeeded in saving foreign exchange to the tune of Rs. 20 million through indigenous manufacture of sophisticated rolling mill equipment.

The equipment was built by HEC for the Metal and Steel Factory at Ishapur, near Calcutta, which inturn is expected to manufacture several types of modern Defence equipment.

HEC has achieved significant strides in production in recent years. It is also instrumental in securing tenders both from domestic and overseas firms. During 1972-73, the Corporation's production reached an all time high in the preceding three years. The output during the year was 45,261 tonnes as against 36,915 tonnes in 1971-72 and 28,489 tonnes in 1970-71. In terms of value, the production during these years was

Rs. 511 million, Rs. 421.30 million and Rs. 310.45 million, respectively. All the three units of HEC, namely, Forge Foundry Plant (FFP), Heavy Machine Building Plant (HMBP), and Heavy Machine Tool Plant (HMPT) contributed to the production increase during 1972-73. Of this, FFP manufactured worth Rs. 121.35 million (29,415 tonnes), HMBP Rs. 374.27 million (36,089 tonnes) and HMTP Rs. 14.65 million (1037 tonnes).

INDO-SOVIET COLLABORATION IN STANDARDIZATION

India and USSR will undertake joint studies on tropicalization, environmental evaluation and reliability testing of electrical and electronic materials, components and equipment. They will also coordinate national standards of the two countries in respect of structural steel sections, namely, channels, angle sections and I-beams. These are among the subjects in respect of which working programmes for the year 1975 have been finalized recently by the Indo-Soviet Working Group on Standardization and Metrology. A five-man Soviet delegation which visited India has had discussions with Indian Standards Institution.

Other programmes covered under the Bilateral Scientific and Technical Cooperation between the USSR and India in the field of Standardization and Metrology are : Automated information retrieval systems relating to standardization and improved systems of training of personnel in standardization, quality control and metrology.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

COSTLY CHEMICALS FROM PADDY HUSK

The Regional Research Laboratory (RRL), Jorhat has developed a number of processes for conversion of paddy husk into a wide variety of industrial chemicals. These include use of paddy husk for the manufacture of furfural and as a substitute for diatomiceous earth used in the production of industrial gases.

Furfural is a solvent used in petroleum refineries and in the manufacture of resins. Paddy husk contains pentoson which can be treated to get furfural. This process almost eliminates the use of steam which accounts for 95 per cent of the cost of production in the conventional process.

Paddy husk ash can also be used as a filter aid and as a decolorising agent in the formulation of household detergents and as an additive in the production of rubber and oil well cements.

To produce speciality carbons like carbon brushes for electric trains and packing rings for refinery scrubbers, paddy husk has to be distilled in the absence of air. This gives a carbonised residue which when further treated gives ashless carbon and sodium silicate. While the former can be used to produce activated carbon or various speciality carbons, the latter can be used as a filler in the soap industry.

The RRL, also claims to have manufactured oxalic acid from paddy husk, using a process similar to that used in producing oxalic acid from saw-dust and molasses.

One of the most promising uses of paddy husk appears to be in the production of molecular seives. After suitable treatment of paddy husk, sodium-alumino-silicate can be obtained which can be used as molecular seives.

Molecular seives, are used mainly as catalysts or catalyst support in the refineries for cracking of oil. These also find a variety of uses in chemical reactions like isomerisation of paraffins, alkylation of aromatics, hydrogenation, drying of process gases, and separation of hydrocarbons. Molecular seives obtained from paddy can be used for all these purposes. RRL, Jorhat is understood to be working on the production of molecular seives of various pore diameters. The Institute has also developed processes to produce lignin and various cellulosic derivatives from paddy husk.

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RESEARCH IN ELECTRO CHEMISTRY

Research in electro-chemistry is being paid growing attention in India in recent years. Growing volume of exploitation of processes developed in the field on commercial scale has, in fact. helped set up a number of industries, diversify production and achieve import substitution which is urgently required for strengthening the Indian Economy.

The Central Electro-chemical Research Institute, Karaikudi, Tamil Nadu, is an organisation engaged in electro-chemical research for product and process development. During 1972-73, the institute has released 6 new processes viz. electrochemical washing of metals, acid inhibitor for for pickling, lead dioxide anodes and perchlorates, calcium tungstate blue phosphor, paint removing jelly and electrolytic manganese dioxide to entrepreneurs. Apart from these, some other processes were also released to industry during the year. They are lead acid battery, detinning of tin scrap, dry cells and sealed nickel-cadmium cell, As at the end of 1973, the number of processes released by the Institute totalled 50 while those ready for release were 30.

The Institute has also assigned some new processes to NRDC for their release to industry. These processes relate to Aminobenzoic acid, zinc chromate primer, non-etching chemical stripper for electro-deposits on iron/steel and copper powder from copper sheets.

The Karaikudi Institute's activities do not merely confine to research only. It also renders consultancy services to its firms. The expertise offered was in the problem areas of materials protection, batteries, metal finishing, industrial electrolytics, photocells and waste utilisation. Apart from the above, the Institute has developed a new electrolyte system for getting an etch ratio of 50 to 30V.

A scheme on corrosion studies of aluminium alloy for heat exchanger application sponsored by a public sector undertaking was also taken up during the year while three sponsored schemes have been completed.

DIGITAL PANEL METER

A low cost Digital Panel Meter (DPM) has been developed by the Electronics Division of the National Aeronautical Laboratory, Bangalore, using the well known dual slope integration technique. The DPM is basically a voltage measuring device, consisting of instrumentation front end, analog switches, integrator, comparator, control circutry and the counter with display.

The DPM has special features like small front dimensions, accuracy, ease of interface, attractive digital display, etc. The measured input value is displayed in sign magnitude (decimal) form. The design incorporates autozeroing technique which automatically takes care of the drift in the amplifiers. Autopolarity is another attractive feature. The outputs are available in BCD form. With a little addition of circuitry this can be extended as a multimeter.

As this unit can measure any electrical signal, it is normally used as digital voltmeter in research institutions and universities and and as an Analog to Digital Converter for Data Logging and Computer Controlled Instrumentation for Plant Automation in industries like steel industry and petrochemical industry. The DPM has been designed to operate directly from mains supply of 50 Hz. Also it starts conversion in synchronisation with mains 50 Hz frequency. It is expected that the demand for digital panel meter may be around 200 units per year. The requirements of the country for this item, at present, are being met through imports. The know-how is being assigned to the National Research Development Corporation (NRDC) for commercialisation. □

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METALLURGICAL AND ENGINEERING CONSULTANCY FOR EXPORT

The Indian industry has, to-day, acquired requisite expertise and maturity to undertake foreign assignments involving technical consultancy and engineering services. In this context, under an Agreement recently concluded between India and Hungary, the Metallurgical and Engineering Consultants (India) Ltd. (MECON), have been entrusted with design and engineering of a coke oven plant in Hungary. The plant to be set up in Hungary will secure about Rs. 250 million in foreign exchange to India and will be about the same size as that of Bokaro Steel Plant. Earlier too, MECON have secured two other foreign assignments, one from Dubai and the other from Bangladesh, to provide technical assistance to set up sponge iron-cum-steel complexes.

MECON emerged as an independent body in April 1973, replacing the Central Engineering and Designs Bureau of Hindustan Steel Ltd. The company has the asset of the services of highly qualified technical personnel with long experience and is also equipped to undertake design and supply of customer-built rolling mills and auxiliary equipment for ferrous and non-ferrous industries. It has already received two major orders for cold rolling mill complexes.

MECON has also been concentrating on research and development to improve indigenous content in engineering manufacture. It has, for the first time, developed a detailed design for the manufacture of coke ovens upto 4.5 metres in height. One of these is being installed at Durgapur and another will be erected at Rourkela. In fact, all coke oven plants which the Engineering Projects India (EPI) supplies to steel plants in India and abroad are of MECON design.

To meet the growing requirements of the Indian steel industry, MECON is presently engaged in developing technical know-how and engineering for sponge iron plants, based on direct reduction processes.

As the principal consultants for Bokaro, the company has already up-dated the Detailed Project Report (DPR) prepared by Russian Engineers and is now engaged with detailed project engineering of Bokaro plant for its expansion upto 4 million tonnes a year stage. It is also preparing the DPR and the detailed project engineering for Bokaro's second stage from 4 to 4.75 million tonnes.

The Project Report for Bhilai expansion from 2.5 to 4 million tonnes has already been completed by MECON. It is now doing the detailed engineering for the expansion. It is also engaged in commencing the detailed engineering for the Dalli Iron ore mine, HSL's captive mine and is working to optimise the existing blast furnace operating parameters for expanding hot metal production at Bhilai, Rourkela and Durgapur. As a result of technological improvements, the blast furnaces in these plants are expected to register an increased production of 0.25 tonnes per cubic metre of working volume.

MECON has now diversified its activities and has entered the non-ferrous and chemical industries in a big way. Most of the drawings and documents for the first phase of the Korba Aluminium smelter complex were completed by MECON in 1973-74. Other assignments undertaken by the company include consultancy and engineering services for the Titanium Project in Kerala, as also for a cold rolling mill complex of Nagarjuna Steels. It is also entrusted with detailed project report for three captive generators for Bokaro Steel and the expansion of refractory plant at Bhandaridah (the captive refractory plant of Bokaro). The organisation has prepared a feasibility report for a refractory plant in Karnataka too. In addition, it has been entrusted with the preparation of feasibility reports for setting up two steel plants-one at Bailadila in Madhya Pradesh, and the other at Surajgarh in Maharashtra, each with a capacity of 2 to 3 million tonnes a year, with facilities for expansion upto five million tonnes each. There is also a possibility of associating MECON in the establishment of the proposed Kudremukh Iron ore project in Mysore.

These are but a few of the projects on hand with the firm. In fact, the technical and consultancy services rendered by MECON, have not only contributed to direct earning from overseas markets but has also helped save the country foreign exchange which might otherwise be payable as engineering fee to foreign firms for such jobs.

AIR-CONDITIONING EQUIPMENT TO SOUTH KOREA

Air-conditioning and refrigeration technology has made notable progress in India during the last two decades. Apart from meeting the domestic requirements, the air-conditioning and refrigeration sector has come to substantially contribute to the country's foreign exchange earnings.

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One of the manufacturers in the line, M/s. Batliboi and Co. (P) Ltd. Bombay has recently executed three export orders of the value about Rs. 5.60 million for air-conditioning equipment for textile mills in South Korea. The first shipment in this context was made in May, the second in September and the third one in October last. The orders have been placed on the Indian firm on a turnkey basis involving basic engineering, designing, manufacture, installation and commissioning.

The Indian industry is self-sufficient for central air-conditioning plants for multi-storeyed buildings, offices and industrial units as also for refrigeration equipment for cold storages, ice plants and fish storages. These are being manufactured with fully developed indigenous equipment. The production was only worth Rs. 20.5 million about a decade back (1965). It rose five fold to Rs. 105 million in 1972. Similarly, production of room air-conditioners which stood at 11,900 numbers in 1965 increased to about 25,100 numbers in 1972.

EXPORT PERFORMANCE AND POTENTIAL

REVIEW OF INDIA'S FOREIGN TRADE POLICY

The high rate of growth in exports achieved by India in the last two years has enabled the country to realise a compound rate of growth of over 12 per cent in exports during the Fourth Five Year Plan period, as against an export target of around 7 per cent envisaged in the plan, stated Prof. D. P. Chattopadhyaya, India's Minister of Commerce, while recently inaugurating the meeting of the reconstituted Board of Trade. During the first half of 1974-75 (April-September, 1974), the exports increased by 41 per cent compared to the same months of 1973-74. It might not be possible to maintain this tempo in the rest of the current financial year, but it would be possible to do better this year than in the previous year.

The Minister said that there has been a shift in the formulation of India's economic policy. In the past, the emphasis was mainly on import substitution and reliance on foreign aid. But now that a substantial industrial structure has since been built, the aspect of export promotion receives priority consideration. Many of the country's non-traditional products which were developed as part of the import - substitution effort are now being produced in quantity and quality sufficient to yield large export surpluses. "Many of the rigidities of the economy have been removed, resources have become more mobile as between one line of production and another and domestic production can now be transformed into exportable output at competitive terms in the world market". In many of the agricultural products and traditional items of production, fresh investment and developmental effort have started generating surpluses which can be exported.

The international situation in the last two years has definitely helped India's export. There can be no denying the changing character of the exporting sector and the emerging outwardness of the economy, which have enabled India to respond to the opportunities provided by the global inflation. In terms of quality, specification, design and attendant services, as well as price, many of the non-traditional items of export are as competitive as products from any other source in the world market. So there is no longer the problem of acceptability as such. Even the traditional products have, in some cases, penetrated new markets and gained a larger share of world trade.

The extent to which the country's exports succeed in achieving a break-through or a take-off, would depend upon whether the momentum of growth can be sustained in the coming years. The situation in the world market is changing. The commodity boom in the world is giving way to a climate of depressed demand in certain major sectors. The recessionary tendencies in the major developed economies of the U.S.A., Western Europe and Japan have started having their impact on the volume of world trade. India's ability to adjust its export effort in response to this changing trend in the world market would determine the volume and content of its exports not only for 6 or 8 months, but also for the periods after that, said the Commerce Minister.

Referring to the problems of a few export products in this context, the Minister felt that in the case of jute manufactures, India's market for carpet backing in the United States is facing a serious threat of competition from synthetic substitutes. The earlier anticipation of their rising cost because of the rise in the price of crude oil has not yet come true. The feedstocks for these products in the United States are based largely on natural gas, and the sympathetic rise in their cost with the rise in the cost of crude has been slow. Even if eventually this cost also increases, in the immediate future the synthetic substitutes of jute carpet backing can very largely out-price Indian products. In cotton textiles, the advantage of India's lower cotton costs of last year has practically been lost. Now, with the slackening demand in the world market, severe competition from Pakistan, where the cotton cost is much lower, and off-loading of Japanese stocks, it may be extremely difficult for India to maintain the level of exports in this field that was achieved during the last few years. The future of oilcakes would depend very much on how fast the country can increase the volume of its exports in the face of declining world prices. Similarly, the future of two other rapidly growing export products of the economy, viz. fish and fish products, and gems and jewellery, is also uncertain as recession in the developed countries might have a severe adverse impact on trade level in these items.

A mature export economy should be able to respond to a changing situation by stimulating the export of those products which still have potential abroad. There are quite a few items, where India's share of the world market is so small and its competitive advantage on the basis of labour-intensity so large that it should be possible to increase the exports quite substantially even if the total volume of the world trade in these products does not grow significantly or even declines. Clear instances of this are engineering products, chemicals and finished leather and leather manufactures, among other commodities. The major constraints on the expansion of exports for these products are on the side of supply. The world market is familiar with Indian products, and they are acceptable to buyers all over the world.

The crux of the problem is to increase the levels of production in these selected areas. The order of increases in the unit values that were realised in the last couple of years cannot be repeated indefinitely. For some products like sugar, the prices may remain high for a definite period, and it should be possible to exploit the situation by diverting as much of current production as possible to the world market for realising higher export earnings. But such opportunities cannot but be limited. When the total volume of production is inadequate, the diversion of a part of the output to the foreign markets naturally implies reduction in domestic consumption. To an extent, even this can be justified because the export earnings finance the import of essential commodities which keep the economy going and help materialize the more fundamental investments. Unless the volume of production increases, the emphasis on curtailment of domestic consumption and diversion to the export market may become counter-productive. The appropriate policy would be to earmark as large a share of the incremental output as possible to the export market, at least over a limited period of time.

On the basis of this diagnosis, the Minister stated that exports were no longer a marginal activity in Indian economy and that increasing exports would be a part and parcel of the problem of increasing total production. With an export-oriented policy of production and pricing, it should be possible to meet the foreign exchange cost of most of the country's requirements and achieve a self-sustained and self-reliant growth in the shortest possible time.

In an endeavour to concentrate national efforts on products with a large export potential and to divert goods to markets where the unit value realisations are the highest, India has been trying to come to an understanding with its competitors, in some of the products where she is major producer and supplier in the world market so that they can jointly maximise their export earnings and introduce an order and discipline in the world market, replacing the present fluctuations and uncertainties.

Such an agreement has been reached with Bangladesh for jute and jute manufactures. For tea, it has been attempted, both bilaterally with the tea producing countries like Sri Lanka and Kenya, and internationally through the FAO and the Commonwealth Secretariat, to achieve higher price realizations, access to new markets, and removal of trade barriers. India has also sought to bring together the iron ore exporting countries and to evolve a permanent consultative mechanism for ensuring stable and realistic ore prices. The deliberations at Geneva would be followed up next month by a meeting of the Preparatory Committee in New Delhi.

India has always been in favour of closer regional cooperation in South and South East Asia. Its initiatives in respect of the Pepper and Coconut Communities, the Asian Clearing Union and other similar concepts of interest in the ESCAP region have begun to yield the desired results. India believes that the forms of such cooperation should be as broad and diverse as the problems of the sub-continent itself.

With the more developed countries, India sought to establish its economic and commercial relations on a more enduring institutional framework. For the first time, it has been possible to set up an inter-Governmental Commission with the USA., which, among other things, will no doubt help to expand trade between the two countries. The Trade Reforms Bill before the American Parliament is a welcome development, which, it is hoped, will benefit India. Already India has a Joint Commission with the EEC. This will meet for the second time this month in New Delhi, and deliberate further on the sectoral agreements and the trade liberalisation measures suggested by the two sub-commissions. With the USSR and the other countries of East Europe, India is now in the process of entering into a new phase of cooperation, involving adjustment of Plan schedules and production patterns, in addition to higher levels of trade exchanges.

As evidence of the country's intention to forge closer links with its immediate neighbours, a long-term and wide-ranging agreement has been concluded with Iran covering not only specific commodities of mutual interest, but also shipping and other infrastructural requirements. With Pakistan, it has been just decided to reopen trade, and thereby put an end to a long and unnecessary interregnum of mistrust and broken ties. These, then, have been India's attempts to widen its horizons and spheres of activity.

At home, import policy has been progressively liberalized over successive licensing periods. Easier access to, and releases of raw materials, both indigenous and imported, have been made possible, particularly for export production. Monetary limits for imported spares and components of machinery items have been raised. Export assistance measures have been extended over a wider range of products, and inter-Ministerial consultations have made it possible to reduce the administrative and procedural delays in securing these facilities. The product coverage of pre-shipment inspection and quality control has been extended and improved. State Governments are being encouraged to form export corporations, and to contribute more consciously and purposively to the national export effort. Research and development, for the evolution of new products and lines of production, are being encouraged in the export-oriented industries. The fiscal structure is under constant review, and selective relief and support for items of export interest have never been denied, provided the need has been made out clearly. Even in the present difficult economic situation and the tight-money policy adopted perforce by Government, substantial relaxations have been secured to meet the genuine requirements of export credit.

PROSPECTS OF INDIA'S EXPORT TRADE

India's exports including re-exports have continued to grow significantly during the first half of the financial year, 1974-75. The overall exports during this period (April-September, 74) at Rs. 15,180 million registered a rise of 41 percent over the exports of Rs. 10,750 million in the corresponding period of 1973-74.

Commodity-wise details of exports available for the first quarter of 1974-75 showed that though a large number of items contributed to the overall increase, the performance was particularly remarkable in the case of cotton textiles and engineering goods. These two items together accounted for an increase of Rs. 680 million or about 37 percent of the total increase of Rs. 1830 million in India's overall exports during the quarter. In terms of value the export performance was also quite significant in respect of items such as cashew kernels, tea, coffee, handicrafts (mainly pearls, precious and semi-precious stones and chemicals. Exports of jute manufactures which suffered a set-back during 1973-74 showed considerable recovery. Spices, lac, finished leather, raw cotton, sugar, mica, cotton piece-goods, handloom fabrics of art silk, coir yarn and manufactures, also registered increases in varying degrees. Among important agricultural products, fish and tobacco did not show any gain during the quarter.

In contrast with the general rising trend, there was a sizeable decline in the exports of oil and oil cakes, semiprocessed leather, iron ore, iron and steel during the first three months of 1974-75. After witnessing a period of boom over the last two-three years the international market for oil cakes and leather have begun to develop slackening tendencies in the current year. The deterioration in iron ore was mainly on account of the severe problem of railway movement.

It is gathered that exports have continued to maintain their upward trend during the second quarter of 1974-75 particularly in respect of items like sugar, cotton textiles, jute manufactures, engineering goods, tea, cashew kernels, chemicals and allied products, lac, coffee and spices. Owing to a boom in world prices, the exports of sugar are expected to show a large increase during the year 1974-75. Exports of oil cakes, and semi-processed leather are reported to have substantially declined both in terms of quantity as well as in value. There was a sharp decline in the unit value realisation in the case of ground-nut extraction which has been attributed mainly to a good harvest of soyabeen in USA and Canada. Export of iron ore though recorded some recovery during the second quarter, still continued to remain lower than in the corresponding period of last year. Among the important agricultural products, tobacco witnessed a significant increase during the second quarter, but the export position in respect of marine products deteriorated further both in terms of quantity as well as in unit value realisation as a result of reduced demand from both major buyers viz. Japan and USA. Pearls, precious and semi-precious stones, a leading growth item of handicrafts, is also losing ground because of present recessionary trends in the international diamond market.

Nevertheless, India's export performance as a whole during the first half of the current financial year has been quite impressive with a growth rate of about 41 percent. However, in view of the present weakening nature of overseas demand for some of the country's important export products such as cotton textiles, oil cakes, leather, marine products, gems and jewellery and the initial set back in the exports of iron ore, it is un-likely that the present momentum in the exports can be sustained at the present high rate of growth in the later half of 1974-75. It is feared that the rate of growth would be considerably lower than that reached in the earlier part of the year. Nevertheless taking the picture of the year as a whole, with encouraging performance in the first half of 1974-75, it is hoped that exports for the whole year might exceed the target of Rs. 26,000 million by a considerable margin.

The outlook for Indian exports in the next financial year 1975-76, would depend largely on the state of economy in the country as well as on the trading conditions in the overseas markets. The economy of the country is presently passing through a difficult period, both by way of agricultural and industrial production not picking up and mounting strain on balance of payment situation. As a result of price hike in crude oil and sharp increase in the world prices of food, fertiliser and non-ferrous metals the import bill of the country has been rising at much faster rate than that of export. Consequently the balance of India's foreign trade was converted from a surplus of Rs. 1030 million in 1972-73 to a deficit of Rs. 3780 million in 1973-74 and this deficit is likely to widen further during the current financial year.

BICYCLES FOR EXPORT

India's export trade of bicycles and parts has been on the rise in recent years. In 1973-74, 161,000 bicycles were exported to fetch Rs. 27 million. In the first half of 1974-75 (April-September 1974), 60,000 cycles were supplied overseas to fetch Rs. 11.40 million. The unit value realisation has been improving too, as would be evident from the fact that in 1972-73, 211,000 bicycles were exported to earn Rs. 25.80 million as compared to the performance in the year that followed.

During 1973-74, the most important importer of Indian bicycles was Iran which imported nearly 71,000 bicycles at a value of Rs. 9.72 million. Next in importance was Nigeria which imported 41,000 numbers at a value of Rs. 6.6 million. USA, has also been an important market for the product; it imported nearly 13,000 bicycles from India in the year at a cost of Rs. 2.6 million. Indonesia is yet another market of prominence and it imported 13,500 bicycles at about Rs. 1.9 million. Bulgaria, Malawi, Kenya, Bangladesh, Afghanistan, Iraq, Singapore and Mauritius were among the other markets.

While such is the picture of India's export trade of complete bicycles, the trade in bicycle parts has been much more significant over the years. The parts and components fetched foreign exchange worth Rs. 152 million in 1973-74 compared to over Rs. 105 million in 1972-73, Rs. 80 million in 1971-72 and Rs. 69 million in 1970-71.

The bicycle industry in India came up mainly after India's independence in 1947. In that year only 37,000 bicycles were manufactured but the output has now increased to 2.7 million numbers (1974). The total installed capacity for production of complete bicycles is more than 4 million numbers per year in the large scale sector alone. Additionally, an estimated 150 small bicycle manufacturing and assembling units are active and nearly 1000 small units produce bicycle components and accessories. A rough estimate of the output of small scale sector would indicate a figure of 0.5 million numbers per year. Apart from the turnover of complete bicycles, the ecomony has sufficient capacity for the production of critical components like bicycle chains, freewheels, hubs and nipples, rims, mudguards, saddles, chain wheels and so on.

UPTREND IN PLASTIC PRODUCT EXPORTS

India's export trade in Plastics and Linoleums totalled Rs. 127 million in 1973-74 registering substantial improvement over the export performance at Rs. 84.30 million in 1972-73 and Rs. 63 million in 1971-72. If the export value during the first seven months of 1974-75 (April-October 1974) is any indication, the uptrend witnessed in the past is expected to be not only sustained but even exceeded during the current year. The export value during the seven month period amounted to Rs. 80.80 million compared to Rs. 53.80 million in the same period of the preceding year, according to the Plastics and Linoleums Export Promotion Council, Bombay.

Of the total export realisation during April-October, 1974 the share of plastics was as high as Rs. 73.45 milllon while linoleums contributed only Rs. 7.33 million.

A number of items contributed to the increase in the period under review. The foremost category of export dynamism was that of plastic moulded and extruded goods. These increased their foreign exchange earning to Rs. 11.30 million during April-October 1974, from Rs. 5.80 million in the corresponding period of the preceding year. PVC rigid and flexible pipes and conduits constituted another important item of export growth at Rs. 12 million compared to Rs. 1.15 million in April-October 1973. Plastic imitation jewellery also recorded a sizeable rise at about Rs. 9.80 million from Rs. 6.65 million. Plastic electrical accessories doubled their export performance to Rs. 5.40 million from Rs. 2.70 million. Laminates (Phenolic melamine also fetched more at Rs. 2.45 million against Rs. 0.94 million while plastic bangles revealed an uptrend at Rs. 2.70 million, compared to Rs. 2.15 million. Plastic denture material exports, though limited, also witnessed a four fold rise from Rs. 0.04 million to Rs. 0.16 million in April-October 1974. PVC gramophone records and accessories constituted yet another area of export dynamism. These earned about Rs. 5.65 million in the period of review in 1974-75 against Rs. 4.20 million in the same period of 1972-73.

Similarly, the export trade in polyethylene and polypropylene films, sheets, bags and woven bags and sacks increased appreciably to Rs. 9.20 million from Rs. 3.95 million while that of foam leather cloth and sheeting improved to Rs. 1.30 million from nearly Rs. 0.22 million. PVC leather cloth also fetched more at Rs. 2.50 million against Rs. 1.35 million. The foreign exchange earning of PVC sheeting including paper based sheeting was also appreciably up - Rs. 2.80 million against Rs. 1 million. Other products in the group of plastics whose exports improved during the two comparable periods were handbags, purses and other PVC fabricated goods (Rs. 0.6 million against Rs. 0.35 million); glass fibre reinforced polyesters and manufactures (Rs. 0.07 million against almost nil); polyethylene rigid and flexible pipes (Rs. 0.55 million against Rs. 0.01 million); Nitro Cellulose cloth (Rs. 0.23 million against Rs. 0.01 million); and plastic brushes (Rs. 0.2 million against Rs. 0.09 million).

Interestingly, a number of items which were not exported at all in April-October 1973, succeeded in gaining a foothold in the corresponding period on 1974. Such items included expanded polystyrene products, PVC foam products and polythene coated fabrics and paper.

There was, however, a decline in respect of some of the plastic products, such as spectacle frames, fountain pens as well as ball point pens and sign pens, metallised plastic products and asbestos floor tiles. Spectacle frames earned less at Rs. 2.50 million against Rs. 6.75 million while the group of fountain pens, ball point pens, and sign pens reduced its foreign exchange earning to Rs. 2.55 million from about Rs. 5.25 million. The exports of metallised plastic products declined marginally to Rs. 0.8 million from nearly Rs. 0.85 million while absestos floor tiles secured only Rs. 0.01 million against Rs. 0.07 million.

Certain linoleum products also revealed sizeable increase in their export value during the period of review (April-October 1974), though the overall export earning (Rs. 7.35 million) of the linoleums revealed decline compared to Rs. 9.45 million in the corresponding period of the preceding year. Jute and felt based linoleums, for instance, fetched Rs. 5.80 million against Rs. 4.30 million. The earning of phenol formaldehyde moulding powder also improved to Rs. 0 30 million from Rs. 0.04 million. Melamine formaldehyde moulding powder was also supplied abroad during the period of review in 1974 while its export in the comparble period in the preceding year was nil. In fact, the performance of the Linoleums would have been much better but for sizeable decline in exports of items like polyethylene Jute combinations and rigid and flexible PVC compounds.

IMPROVEMENT IN SPICES EXPORT

India's export trade in spices registered sizeable growth both in terms of quantity and value during the first quarter of 1974-75 (April-June 1974) over the same period in 1973-74. The exports secured Rs. 147.45 million against Rs. 85 million during the respective periods.

During April-June 1974, pepper continued to be the major foreign exchange earning item having secured Rs. 70.40 million, accounting for nearly half of the total exports of spices during the period. Its export value was also higher than its exports during April-June 1973 at Rs. 46.65 million.

Cardamom (small) also maintained its export uptrend having earned more at Rs. 31.16 million against Rs. 21 million. Turmeric improved its overseas offtake manifold to Rs. 17 million from Rs. 4.45 million, while among other spices Celery seed exports rose sharply to Rs. 5.20 million from Rs. 2.35 million, Cumin seed to Rs. 4.80 million from Rs. 3.72 million, Cassia to Rs. 3 million from only Rs. 0.93 million, Fennel seed to Rs. 2.25 million from Rs. 1.15 million and Curry powder to Rs. 2.15 million from Rs. 1.60 million. Ginger exports, however, declined to Rs. 3 million from Rs. 4.38 million.

Cardamom (big), chillies, coriander seed, fenugreek seed, garlic and Tejpat were the other varieties of spices exported.

During the full preceding year (1973-74) India's export trade of spices reached an all time high at Rs. 548.70 million as against Rs. 290.50 during 1972-73. The increase in terms of quantity was of the order of over 35 per cent while in terms of value it was 89 per cent, mainly because of higher unit value realisation.

During the year, 28 percent of India's export of spices in terms of value were directed to the Middle East countries while the East European Zone accounted for 27.40 percent. The share of American Zone was of the order of 21.7 percent. UK and ECM countries bought about 9.6 percent and East Asian countries 9.5 percent.

Itemwise, exports during 1973-74 were of the order of: Pepper Rs. 295.80 million; Cardamom Rs. 115.50 million; Chillies Rs. 4.10 million; Ginger Rs. 21 million; Turmeric Rs. 26.50 million and Curry powder Rs. 7.40 million. Besides, coriander seeds, cumin seed, fennel seed, fenugreek seeds, garlic, aniseed, cassia, mace and Tejpat also appeared in the export range and their combined export realisation was Rs. 62.90 million.

MORE FOREIGN EXCHANGE FROM HANDICRAFTS

With the backing of experience for several centuries, Indian handicrafts are achieving significant strides in enlarging the production range and export volume.

Overseas sales of Indian handicrafts which were of the order of hardly Rs. 190 million in 1961-62, registered seven-fold increase to reach the Rs. 1300 million mark during 1972-73. During 1973-74, these are stated to have reached a record level of Rs. 1810 million. Today, handicraft exports account for as much as 7.5 per cent in India's total exports as against hardly 2.8 per cent during 1961-62.

In the comprehensive range of Indian handicrafts that find ready acceptance abroad, mention may be made of woollen carpets, rugs, druggets and Namdahs, art metalware, woodware, hand printed textiles and scarves, imitation jewellery, shawls, Zari, Ivory products, carpets, rugs and durries of cotton, embroidered goods, precious, semi-precious and synthetic stones, jewellery from other precious metals (platinum, gold and silver etc.).

Precious, semi-precious and synthetic stones account for the lion's share in overall exports of handicrafts (nearly 60 per cent). During 1973-74, these fetched foreign exchange to the tune of Rs. 1067 million as against Rs. 779.30 million in 1972-73. Woollen carpets, rugs and druggets including numdahs constitute yet another category of export expansion during the year—Rs. 264.25 million against Rs. 214.40 million. Among other items, art metalware earned Rs. 124.90 million against Rs. 88.50 million, hand-printed textiles and scarves Rs. 68.70 million against Rs. 48.25 million, woodware Rs. 63.70 million against Rs. 40.45 million, imitation jewellery Rs. 31 million against Rs. 21.70 million, embroidered goods Rs. 23.17 million against Rs. 10 million and zari nearly Rs. 19.85 million against Rs. 9.35 million.

Besides these, carpets, rugs and durries of cotton, ivory products, jewellery of other precious metals, such as, platinum, gold jewellery, silver jewellery, shawls as artware and miscellaneous handicrafts were also exported during 1973-74.

Indian handicrafts are sought after in as many as 100 countries all over the world but USA and West European countries are the major purchasers, which account for more than 60 per cent of the total Indian supplies every year. South East Asian countries absorb about one-fifth of total Indian supplies while East European countries buy about 3.6 per cent. More than 80 per cent of the total supplies are directed towards fourteen countries—USA, Belgium, Hong Kong (gem and jewellery), Federal Republic of Germany, USA, UK and Canada (carpets), USSR (Art metalware).

In terms of value-wise intake of individual buying countries during 1973-74, USA constituted the largest market having imported Indian handicrafts worth Rs. 418.80 million against Rs. 292.80 million (1972-73), Belgium—Luxembourg nearly Rs. 200 million against Rs. 163.20 million, Hong Kong Rs. 214.70 million against Rs. 121.10 million, Federal Republic of Germany Rs. 129.10 million against Rs. 123.40 million, Japan Rs. 147.10 million against Rs. 98.90 million, UK Rs. 116.20 million against Rs. 89.30 million, Netherlands Rs. 67.30 million against Rs. 56.70 million, Switzerland Rs. 57.20 million against Rs. 38.70 million, France Rs. 61.20 million against Rs. 38.10 million, USSR Rs. 21.80 million against Rs. 24.30 million, Singapore Rs. 52.90 million against Rs. 23.70 million, Australia Rs. 37.60 million against Rs. 21.10 million, Canada Rs. 32.60 million against Rs. 19.90 million and Saudi Arabia Rs. 24.20 million against Rs. 13.80 million.

SHARP INCREASE IN PROCESSED FOOD EXPORTS

India's export trade in processed foods is witnessing consistent uptrend in recent years. During the first half of 1974-75 (April-September 1974), the exports secured foreign exchange worth Rs. 190 million in comparison to Rs. 107.30 million during the corresponding period of the preceding year (1973-74). The export improvement during the period under review over the corresponding period of 1973-74 was as much as 77.20 percent, according to the Processed Foods Export Promotion Council, New Delhi.

As many as 30 items falling under the purview of the Council were supplied abroad during the period of 1974-75. Among these, guar gum, frozen meat, fresh onions, walnut kernels, mangoes, instant tea, pickles and chutneys, slices, mango pulp, Jams and juices were the specific items which improved their overseas offtake considerably. However, mango juice, non-alcoholic beverage bases, instant cooffee, cocoa products and animal casings were the items which witnessed fall in their foreign exchange earnings.

Guar gum, for instance, registered more than three-fold increase in exports during April-September 1974 to Rs. 78 million from its earlier level of Rs. 24 million (April-September, 1973). Frozen meat also improved its overseas offtake nearly six-fold to nearly Rs. 13 million from Rs. 2.35 million. Among other items, fresh onions brought in Rs. 17.10 million against Rs. 15.20 million, walnut kernels Rs. 14.70 million against Rs. 4.38 million, mangoes Rs. 5.20 million against Rs. 4.37 million, instant tea nearly Rs. 5 million against Rs. 2.15 million, pickles and chutneys Rs. 7 million against Rs. 6.35 million, and other juices (except mango juice), slices, mango pulp and jams Rs. 4.53 million against Rs. 2.10 million. Apart from these, dehydrated onions and garlic, poultry products and wheat bran which did not appear at all in export trade during April-September 1973 were also exported during the period under review.

Instant coffee (Rs. 7.55 million against Rs. 12.60 million), cocoa products (Rs. 0.80 million against Rs. 3.50 million), non-alcoholic beverages (Rs. 4.25 million against Rs. 5.93 million) and mango juce (Rs. 1.35 million against Rs. 5.97 million) were the specific items of reduced overseas intake during the period.

During April-September 1974, Guar gum was supplied to USA, UK, France, Italy and Federal Republic of Germany while canned, frozen meat and poultry products were directed to Kuwait, Bahrein, Islands, Dubai and Muscat. Fresh onions found their way to Singapore, Malaysia and Dubai and walnut kernels to UK, Australia, Japan, Canada and USSR. UK and Kuwait were the major buyers of mangoes while UK and USA were the principal consumers of instant tea. Indian pickles and Chutneys were bought by a number of countries amongst which USA, UK, Federal Republic of Germany, Malaysia, Australia and Canada are prominent. UK, USA, Kuwait, Yugoslavia and Poland were the leading destinations for other juices, slices and mango pulp.

For instant coffee, USSR was the main market while cocoa products were bought mainly by UK, Kuwait, Dubai and Hong Kong. Gulf countries like Saudi Arabia, Bahrein Islands and Dubai constituted the leading consuming countries of mango Juice.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

ON CEMENT INDUSTRY

India's Cement Industry has made progress over the years both in regard to production of cement as well as the plant and equipment needed for producing cement by the wet or dry process. While the industry added a capacity of 1.74 million tonnes during the First Plan (1951-56) the capacity added during the Fourth Plan (1969-74) was about 5 million tonnes, bringing it to about 20 million tonnes as now.

During this period, there has been a marked shift towards bigger capacity kilns with the result that 300 tonne/ day kilns gave way to 600 tonne/day kilns about a decade back and now bulk of the economy's new capacity is being based on 1000-1200 tonne/day kilns. On the technology side, nearly all the new plants will be dry process plants unless there are raw material constraints. Also there has been a greater realisation for conserving inputs required for producing cement. However, the utilisation of capacity which, not many years ago in 1965, was about 90 per cent on the average, suffered set back; it was 76 per cent during 1973. Certain circumstances in the recent months have improved capacity utilisation of cement to about 80 per cent in the month of October 1974. The Government of India have initiated special arrangements to facilitate coal supplies to the Cement Industry and its linkage with wagon movements from various collieries. It is hoped that the improvement in the next few months would enable the industry to produce at least 4 million tonnes more of cement during 1975.

It was intended to instal an additional capacity of 9 million tonnes for cement production during the Fifth Plan. But seized with the problem of low capacity utilisation and tardy growth of new capacitiess, steps were taken for conserving cement consumption in certain not so essential areas. Additional capacity covered by licences and letters of intent amounts to more than 19 million tonnes; the orders with machinery producers cover, however, only one-fourth of this capacity i.e. 4.5 million tonnes, (more than half is from Central and State Public Sectors).

During 1973-74, cement production stood at 14.61 million tonnes while production between 1974-75 (April-November) has been 9.47 million tonnes. The current year (1974-75) is likely to end with a production of 15 million tonnes.

Production of Pozzolana Cement based mostly on fly ash will, during 1974, be of the order of 350,000 tonnes as compared to less than 20,000 tonnes in 1972. The production of slag cement has also gone up subtantially during the past two years and as more and more of granulated slag becomes available from the steel plants its utilisation would be augmented. A number of schemes have been approved to cover granulated slag likely to become available from all the steel plants by 1978-79.

Utilisation of industrial wastes which adds to the cement production without having to make investments for making clinker is another aspect which has received priority in India. Today, 2.3 million tonnes of fly ash is available but a large part of it, as much as 85 per cent, is collected in wet state. Power houses are being persuaded to make alterations in the system of collecting fly ash so that the ash in dry state is available to the cement producers.

The next is the aspect of conservation of energy inputs, particularly fuel. Most of the plants in India are wet process plants covering 70 per cent of the capacity. While the new plants will be dry process plants, the feasibility of conversion of the existing wet process plants to the dry process ones thus effecting a considerable saving in coal besides increasing capacity at lower costs is also being examined.

India is already supplying cement in different varieties to a number of markets. During 1973-74, for instance, India exported 160,747 tonnes of cement to about a dozen countries at a value of Rs. 25 million. Of this the Portland grey variety secured as much as Rs. 24.95 million. Bangladesh constituted the bulk importer during the year having absorbed 83,694 tonnes at a value of Rs. 15.15 million. Nepal, the second important buyer imported 33,403 tonnes at Rs. 6 million, followed by Dubai 23,850 tonnes at Rs. 2 million and Qatar 14,890 tonnes at Rs. 1.30 million. Besides Portland grey, other varieties, such as, Portland coloured and hydraulic cement were purchased by Philippines, Saudi Arabia and Thailand, though in insignificant quantities.

Apart from cement, a number of cement products were exported abroad during the year. The export range included asbestos cement pipes, sheets, tiles and other articles of asbestos cement. These cement items together earned an additional foreign exchange of little over Rs. 7.00 million.

Asbestos cement sheets alone fetched as much as Rs. 4.70 million. Abu Dhabi absorbed 1535 tonnes at Rs. 1.70 million, Dubai 2045 tonnes at Rs. 1.06 million, Tanzania Republic 644 tonnes at Rs. 0.45 million and Qatar 900 tonnes at Rs. 0.44 million.

Asbestos cement pipes which earned Rs. 1.48 million were mainly directed to Dubai, Abu Dhabi and Nepal. Mauritius and Indonesia were among other buyers.

MACHINERY FOR MANUFACTURE OF ELECTRIC LAMPS

M/s. Hindustan Machine Tools (HMT), the largest Machine Tool manufacturing concern in India has further diversified its production range to include electric bulbs and lamps and machinery to its manufacturing activities.

The project, estimated to cost nearly Rs. 100 million has been set up at HMT's unit at Hyderabad with Hungarian collaboration. The range of manufacture of the unit includes electric bulbs and lamps of all types alongwith lamp making chains which consist of a number of machines required in lamp and bulb manufacture.

HMT's collaboration with M/s. Tungaram of Hungary in this line of manufacture includes import of complete know-how for the manufacture of vacuum technical machinery initially, for the production of GLS lamps and capable of manufacturing 2000 lamps per hour. The collaboration agreement also provides for supply of Hungarian know-how in future for manufacture of other vacuum technical machinery to produce fluorescent tubes, miniature bulbs and automotive lamps. HMT would, thus, be in a position to render turn-key services to set up lamp manufacturing units in the country.

A bulb factory with a capacity to produce 20 million bulbs every year would also be set up at the HMT unit for the purpose of testing and consumer satisfaction.

Under the second agreement with the Hungarian firm, HMT has been appointed as the sole selling agents in India for the products manufactured by the Hungarian firm. The agreement contemplates provision for export of high speed GLS chains, lamps and lamp components to neighbouring countries. HMT manufactured components of lamp making machinery will also be imported by its Hungarian counterpart at a value of Rs. 10 million every year.

For the first time in India, tungsten wires will be drawn from tungsten rods of 5.5 mm diameter which would save a sizeable amount of foreign exchange by avoiding imports of expensive tungsten wires of reduced diametres.

India's exports of electric lamps and parts improved to Rs. 4.46 million in 1973-74 from Rs. 3.50 million in the preceding year.

In the total export earnings during 1973-74 flourescent tubes and lamps contributed Rs. 1.85 million. These were bought by nineteen countries. Amongst which Hong Kong, Bangladesh, Iran, and Nigeria were prominent. Besides, flourescent tube parts and other electric lamp parts earned Rs. 1.95 million, mainly from Abu Dhabi, Dubai, Korea, Kuwait, Muscat, Nigeria, Hong Kong and Mauritius.

Besides these, mercury vapour lamps and other electric discharge lamps, torch bulbs and other miniature bulbs, automobile bulbs, gas-filled electric bulbs, studio lamps and other incandescent glow lamps and arc lamps were also supplied abroad during the year.

India's total production of GLS lamps during 1973 was of the order of 140 million numbers as against 128 million numbers in 1972. There were 12 units engaged in the production in the organised sector with a combined installed capacity of 140 million numbers. Besides the units in the organised sector, a few units in the small scale sector are also producing GLS lamps of lower wattage. Specialised lamps, such as, mercury lamps are presently being manufactured by 5 firms with a total installed capacity of 0.30 million numbers per annum. In the same year, production of fluorescent tubes was 10.2 million numbers while the output of miniature lamps amounted to 33 million numbers. During the year, there were nine units engaged in the production of fluorescent tubes and seven units in the manufacture of miniature lamps.

The import of GLS lamps is banned. Indigenous know-how is available for the manufacture of conventional lamps. Proposals for foreign collaboration for the production of specialised lamps like Halogen lamps and shadowless lamps could, however, be considered on merits. Miniature lamps, like tourch light bulbs, radio dial bulbs etc. are reserved exclusively for small scale sector.

A substantial portion of tungsten filament, the main raw material required for manufacture of fluorescent tubes is procured through imports. Already, a few schemes for the manufacture of this item have been licensed.

QUARTZ CRYSTAL ELECTRONIC WATCHES

For the first time in India, Quartz Crystal Electronic watches have been marketed by M/s. Hegde and Golay, a watch and watch component manufacturer at Bangalore. With this, India joins the select group of those few countries in the world which have produced Electronic watches.

Called 'U Qartz Crystal', the watch is a gents' wrist watch. The Bangalore firm is an Indo-Swiss entreprise.

CULTURED PEARLS DEVELOPED IN KERALA

The Central Marine Fishering Research Institute, Cochin, Kerala state is reported to have successfully developed cultured pearls at the Vizhinjam Centre, near Trivandrum.

In the process developed by the Institute, pearl oyster used for culture started yielding lustrous pearls within 35 days. Several oysters were operated and pearl formation was found to be statisfactory.

The Oysters at Vizhinjam are reported to have shown a relatively faster growth than elsewhere. pearl culture here is said to be akin to that in Japan.

It is stated that commercial production of cultured pearls in Kerala promises rich potentialities. The Institute proposes to plan large scale production of cultured pearls at the Centre.

RECENT TRENDS IN INDIAN ECONOMY

An estimate of India's national income in 1973-74 as given by the Reserve Bank of India reveals a growth rate of 4 percent over the preceding year. The Net Domestic Product at current prices for 1972-73 has been placed at Rs. 391,870 million (Rs. 192,730 million at 1960-61 prices). The general index of industrial production, according to the latest Report on Currency and Finance (1973-74) published by the Reserve Bank of India was 200.7 in 1973-74 as against 199.4 in 1972-73 and 186.1 in 1971-72 (1960=100). The Agricultural Production—All Crops Index—was 118.5 in 1972-73 as against 130.4 in the preceding year (1961-62=100). The Wholesale Prices Index (1961-62=100) for all commodities was 254.2 in 1973-74 as against 207.1 in 1972-73, 188.4 in 1971-72 and 181.1 in 1970-71.

Money supply with the public was of the order of Rs. 108,360 million during 1973-74 as against Rs. 94,120 million in 1972-73. While the currency with the public was Rs. 63,340 million in 1973-74 and Rs. 54,430 million in 1972-73, the deposit money with the public stood at Rs. 45,020 million and Rs. 39,700 million in the respective years. India's foreign exchange reserve totalled Rs. 9470 million in 1973-74 as against Rs. 8460 million in 1972-73.

The country's population was estimated at 585.43 million in 1973-74 as compared to 573.59 million in 1972-73 and 561.86 million in 1971-72.

The external indebtedness of Government of India was reduced to the level of Rs. 58,300 million in

1973-74 as compared to Rs. 71,610 million in the preceding year. The internal indebtedness of the Government, however, increased from Rs. 159,580 million in 1972-73 to Rs. 174,390 million in the year that followed.

The country's import bill was of the order of Rs. 26,360 million in 1973-74 as against Rs. 18,270 million in 1972-73. Its export earnings improved from Rs. 19,610 million in 1972-73 to Rs. 24,110 million in 1973-74. Thus the net balance of trade which was favourable to India to the extent of Rs. 1340 million in 1972-73 went adverse to the tune of Rs. 2250 million in 1973-74.

The Reserve Bank of India's Report referred to above reviewed the trends in the Indian economy during the year July 1973 to June 1974. "These twelve months were a period of severe inflationary pressures, with the whole sale price index registering an increase of 28 per cent". In recent months, however, the situation has changed significantly. Several steps taken by the Government of India and the Reserve Bank of India have had the effect of changing the spiralling costs and prices. There has, however, been some slackening of demand for industrial goods mainly as a consequence of reduction in public expenditure. With a view to keeping deficit financing under control, the Government introduced economies in expenditure both on plan and non-plan items. Government's outlay on the construction of buildings was drastically reduced. Dividends on company share were limited to 12 per cent or one-third of the profits taxed whichever is lower. Simultaneously supplementary measures for raising additional resources have been adopted. The Reserve Bank of India raised the bank rate from 7 per cent to 9 per cent in July 1974 and the minimum lending rate to be charged by commercial banks was stepped up from 11 per cent to 12.5 per cent. Also interest rates on various categories of commercial bank deposits were raised. Steps were also taken to import 4.5 million tonnes of foodgrains to mitigate the shortages in supply and procurement. On the monetary side also the Government have effected sizeable reduction in their dependence on the banking system. The Reserve Bank's credit to Government is half of what it was in the preceding year. Gross bank credit to the commercial sector has also been kept under control. Against this background, there were apprehensions of an impending recession in the economy. Conditions of declining demand were no doubt evident in the case of capital and intermediate goods such as steel, contruction materials, machinery and transport equipment. Among consumer goods, cotton textile industry and industries producing durable consumer goods complained about recessionary trends setting in. The tendency has been more in the form of temporary stocks of finished goods, rather than significant cut-back in production or prices.

"The mild form of recession is not likely to affect adversely the expected flow of aid from both multilateral and bi-lateral sources".

In formulating domestic policies for stimulating investment, the Reserve Bank of India opines that it would be necessary to keep in view the need to raise additional real resources. There is scope for raising resources from public undertakings through improved operational efficiency and capacity utilisation. Potential resources from the agricultural sector remain to be fully tapped too. Thus the possibility of supporting additional investment with additional mobilisation of resources is evident.

"While a concerted action will be necessary to step up exports as much as possible the major thrust of policy is clearly to be in the direction of raising real resources for a step up in domestic investment and production".

Total domestic saving in the Indian economy at current prices has been estimated to have increased by Rs. 6660 million (15.4 per cent more) in 1973-74 as compared to the increase of Rs. 2530 million (6.2 per cent more in the previous year). The total domestic saving in 1973-74 stood at Rs. 50,000 million as compared to Rs. 43,340 million in 1972-73.

Domestic investment in 1973-74 constituted 10.8 per cent of the national income in 1973-74 as against 11.8 per cent in the preceding year.

Foodgrains production during 1973-74 was higher than in the year before. Also the production of important commercial crops recorded increase. The foodgrains production in the year was expected around 107.5 million tonnes as against 95.2 million tonnes and 105.2 million tonnes in 1972-73 and 1971-72 respectively. The production of rice is estimated to have recorded a sizeable increase from 39 million tonnes in 1972-73 to 45 million tonnes in the year that followed. Wheat output, however, declined marginally to 24 million tonnes from 24.9 million tonnes. The per capita availability of foodgrains during 1972-73 dropped to 422.7 grams per day as compared to 465.5 grams in 1971-72. A target of 25 million hectares envisaged in the Fourth Five Year Plan for coverage of area under high-yield varieties of cereals by 1973-74 is expected to be fully achieved.

All key commercial crops - raw jute, raw cotton, oilseeds, sugar cane and tea witnessed noticeable improvement in their output during 1973-74 compared to the preceding year. Cotton production, for instance, was of the order of 5.5 million bales (180 kgs. each) in 1972-73 which improved to an estimated 6.75 million bales in 1973-74. Production of jute and mesta rose from 6.1 million bales to 7.3 million bales. Production of oilseeds was 6.9 million tonnes in 1972-73 (November-October) but in 1973-74 the output was estimated at 9.3 million tonnes. Tea production rose from 456 million kg in 1972 to 468 million kg in 1973. The output of sugarcane is also reported to have gone up from 12.6 million tonnes in 1972-73 to 13.5 million tonnes in 1973-74.

The overall industrial output of the Indian economy remained stagnant during 1973. The average increase of industrial production (1960-61=100) for 1973 revealed a nominal rise of 0.7 per cent against a rise of 7.1 per cent in 1972 and 2.9 per cent in 1971. The capital goods industry sector, however, recorded high rate of growth (13.7 per cent) in the first ten months of 1973 due to better performance in heavy electrical and non-electrical engineering plants of the public sector. Also transport equipment industry fared better and railway wagons industry showed higher output. Among other items of capital goods, increases occured in industrial machinery items. Except for the capital goods sector, the industrial output picture has been of stagnation owing to shortages in critical sectors, such as steel, non-ferrous metals, coal and petroleum products, power and transport. In the basic industries sector, power generation which experienced growth rates ranging from 9 to 16 per cent every year for more than a decade, shrank for the first time. The shortages of power and coal have hit a wide range of industries like steel, non-ferrous metals particularly aluminium, cement, paper and paper products, cotton and jute textiles, fertilisers and certain items of chemicals like soda ash and calcium carbide. With the stagnation in industrial output in 1973-74, the average annual growth rate for the entire Fourth Five Year Plan period ending 1973-74 would work out to about 4 per cent - less than half of the target of 8 to 10 per cent envisaged in the Plan. This shortfall is particularly noticed in crucial sectors like coal, iron and steel, cement, aluminium, railway wagons, caustic soda, ash, fertilizers, paper and paper products, cotton spinning and so on.

The overall decline in industrial output was also reflected in lower capacity utilization ratios in many industries in 1973 as compared to the previous year. In many basic industries the ratio declined considerably—such as cement (80 per cent to 76 per cent), nitrogenous fertilizers (68 to 64 per cent), soda ash (96 to 92 per cent), while the ratio for sulphuric acid increased from 58 to 65 per cent and that for caustic soda registered a marginal rise from 92 per cent to 94 per cent. In phosphatic fertilizers also capacity utilisation showed improvement. Among capital goods industry, capacity uiilisation ratio in wagon building and motor vehicles improved to 35 per cent and 136 per cent respectively from 30 to 125 per cent in 1972. Significant decline in capacity utilisation ratios were noticed among certain intermediate goods industries also such as cycle tyres and tubes, paints and varnishes and ceramics.

In the field of external payments, the Reserve Bank of India has reported that the country had to face three major adverse factors during July 1973-June 1974. (a) large scale imports of foodgrains (b) food imports along with those of fertilizers and non-ferous metals at abnormally high international prices and (c) quadrupling of crude oil prices at the end of 1973, imposing a heavy burden on external payments account. The increase in imports, the loan of 2 million

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tonnes of wheet by U.S.S.R. and deferred payments arrangements negotiated in early 1974 in respect of a portion of the country's crude import needs however helped to cover part of the payments deficit. Even so a significant recourse to borrowings from the International Monetary Fund was required to prevent a sizeable decline in the foreign exchange reserves. An export compensatory drawing of Rs. 620 million was made from IMF in February 1974 and two months later the gold tranche of Rs. 722 million was drawn which was followed up by the drawing of the first credit tranche of Rs. 2203 million in May 1974. With these drawals, the foreign exchange reserves moved up during 1973-74 by Rs. 2440 million to reach the level of Rs. 11,260 million by the end of June 1974 (in the preceding year the reserves increased by Rs. 380 million). During 1972-73 foreign exchange reserves marginally declined by Rs. 30 million to Rs. 8460 million as against a rise of Rs. 1160 million during 1971-72.

The net external assistance receipts declined during 1972-73 to the lowest level for the last ten years. During 1973-74, the net transfer of reserves to the Indian economy under external assistance improved by 65 per cent but still amounted to a modest Rs. 2080 million, as a sizeable proportion of the aid offered was absorbed by debt service payments. The aid authorised during the year comprised of loans and grants which amounted to Rs. 10,210 million, 61 per cent higher than in the preceding year. Debt service payments increased marginally in the year. □

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INDIA E.E.C. JOINT COMMISSION

The Second Session of the India-E.E.C. Joint Commission was held recently in New Delhi under the chairmanship of Mr. Y.T. Shah, Secretary, Ministry of Commerce, Government of India. The Indian delegation was led by Mr. Shah while that of European Community was led by Dr. Manfred Caspari of the Directorate General of External Relations of the Commission of the European Communities. The Session was inaugurated by Prof. D.P. Chattopadhyaya, India's Minister of Commerce.

In his inaugural address Prof. Chattopadhyaya, underlined the need for increasing the share of India in the trade of EEC, through better access for its commodities and development of trade in new areas. India has developed capabilities in many fields which could be utilised to mutual advantage. He called for a new bold approach in the work of the Joint Commission with a view to ensuring that the results of the discussions at the Commission would be operationally significant.

The First Session of the Commission laid the foundation for the functioning of the Commission by setting up two Sub-Commissions on Sectoral Agreements (on specific commodities of trade) and on Cooperation. Since the First Session met, the economic crisis in the world has had its impact on the trade and economies of several countries. India has been one of the worst affected economies by the crisis. The country has taken many steps to expand its exports to meet its essential imports and other requirements and minimise domestic consumption to make available surpluses for exports. In terms of rupee value, the exports showed an increase from Rs. 19.7 billion in 1972-73 to Rs. 24.8 billion in 1973-74, but the import bill also went up from Rs. 18.7 billion to Rs. 29.2 billion, thus changing the marginal surplus balance of trade to a deficit. Owing to the requirements of food, fertilizers and essential raw materials, the deficit is likely to further increase in the current year, stated the Minister.

An attempt has been made in India over the years for expansion of its export base and considerable progress has been made for development of a wide production base for the manufactured goods. Traditional products, however, still continue to form a major part of India's exports. The most important commodities exported by India have not benefitted significantly from the so-called boom of the last few years. Particular mention may be made in this connection of items like tea, tobacco, cashew-nuts and jute whose price movement was much below the average of primary products. Consequently, the average unit value realisation for India's export items increased much less than the average for developing countries who on the whole maintained their share of the global exports at around 18 per cent in 1972 and 1973. The fact that the market for some of the commodities in which India is interested has begun to show a tendency to weaken, has been giving rise to some concern. While therefore, India is deeply interested in improving its access to the community market and the terms of trade for such commodities and goods, it becomes necessary for her to diversify and develop exports in other fields to the maximum possible extent.

Referring to India's export to the Community, the Minister stated that it witnessed a sizeable increase last yar (1973-74) to a figure of Rs. 5.9 billion from the figure of about Rs. 4 billion in the previous year (1972-73). The over-all share of Indian exports to the EEC in the global exports also increased from 20 per cent to 24 per cent. India's balance of trade with the Community, however, still continues to be adverse and in 1973-74 there was a deficit of nearly about Rs. 1 billion. The trend of development has also not been uniform over different Member-States, the deficit being particularly significant for three Member-States. European Economic Community is the biggest trading partner of India now. But in the global trade, India's share is not even 1 per cent.

Recalling with appreciation the series of helpful decisions taken by EEC during 1974, the Minister referred to the EEC's decision to grant $ 50 million bilaterally to India within the framework of its commitment to the United Nations Emergency Operations for the Most Seriously Affected Countries. The Community's decision to supply a million tonnes of food grains to India was also timely and welcome. The decision taken in the framework of Community's commitment under its Generalised Scheme of Preferences (GSP) for 1975 is also worth mentioning; this was in respect of duty-free quota in quantitative terms for Virginia flue-cured tobacco, maintenance of duty-free entry for Indian jute and coir products in the UK and Denmark and enlargement of duty-free quotas for handicrafts and handlooms. The recently formulated Commercial Development Cooperation Policies of the Community on a world scale and the technical assistance programme have also opened up scope for specific and suitable programmes to be evolved for India at Community level. 'We look upon these as a happy augury for all-round development of Community's economic and commercial relations with India', the Minister said.

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Dr. Caspari speaking on the occasion emphasised the importance that EEC attaches to evolving the development of its commercial relationship with India, particularly through cooperation. He observed that notwithstanding its difficulties resulting from the current economic crisis, EEC would like to pursue its liberal foreign trade policy and continue its aid to the developing world. He further stated that while aid given in circumstances of necessity would have a role to play, a lasting contribution to the progress and development of a country like India would be primarily met by mutually advantageous commercial and economic cooperation.

The Joint Commission discussed various measures for increasing access for Indian jute and coir products to the Community markets. The community confirmed that the present arrangement of duty-free entry of these products from India to UK and Denmark has been allowed to be continued, during 1975. Other important conclusions reached were to consider quota increases for certain jute goods, special treatment for specialities and eliminating Community tariff on jute and coir products by 1977, as also to promote exports of handloom and handicraft products to the Community. The Indian side presented its views on cotton textiles but the matter was not discussed in detail as bilateral negotiations of a new agreement had commenced already under Multi-Fibre arrangement. Pending the finalisation of the new agreement, the Community side offered to roll on the present arrangement in regard to cotton textiles through the first quarter of 1975. The present arrangement envisages an annual quota of 11,500 tonnes for the original six members of the EEC., 209 million sq. yds. for UK and an additional quota to Denmark and Ireland.

The Joint Commission also considered a number of proposals for cooperation aiming at development and diversification of trade between India and the EEC, covering tea, chemical and allied products, leather and leather goods, light and heavy engineering and electronic and computer services. In most of these fields, preparatory work is already at an advanced stage and some of them might considered for Community's programme proposals for 1975. The joint Commission also recommended technical assistance to common facility centres in the leather industry design assistance in the field of handloom and handicrafts. The proposals that have been referred to the Sub-Commission on cooperation for further study included those on chemicals and allied products, marine products, electronics and engineering goods. The Sub-Commission on Cooperation also agreed that details of India's export capacities should be disseminated within the Community with a view to encouraging mutual cooperation in third countries.

BUYER-SELLER MEET IN LONDON

During a Buyer-Seller Meet held recently (October 1974) at the World Trade Centre, London under the joint auspices of India's Trade Development Authority (TDA) and Common Wealth Fund for Technical Co-operation (CFTC), TDA's clients booked orders worth about Rs. 6.7 million on the spot and have received in addition firm enquiries worth Rs. 16 million. Unlike in the past when orders/enquiries were generally received mostly for readymade garments and handicrafts, the bulk of the orders and enquiries booked at the Buyer-Seller Meet has been for consumer electronic products. Out of the enquiries received, actual orders of the value of Rs. 9.39 million are expected to be received by the end of 1974. The rest of the enquiries valued at Rs. 6.8 million are expected to mature within a year's time.

Electronic products were responsible for nearly 80 per cent of the orders booked and enquiries received. The most remarkable business transacted was that of Sonodyne Corporation, Calcutta, whose entire production has been booked by a UK buyer for the next two years. The total value of this order was Rs. 2.74 million. The products which the firm would be exporting to the UK are stereo amplifiers, speakers, headphones and battery eliminators. The other electronic products which received notable response from the UK buyers were car radios, car aerials, AM/FM radios and high voltage stereo amplifiers. The total orders booked for electronics were of the value £ 229,500 (Rs. 4.59 million).

The value of orders booked by TDA's clients for garments in this Meet was of the value of Rs. 1.76 million. Leading department stores like John Lewis & Macy's, (UK Buying Office) have not only evinced keen interest in the products displayed but also accounted for most of the orders and enquiries. TDA is confident that the enquiries would result in substantial export business before the end of 1975.

The third leading product group in the Meet was handicrafts and imitation jewellery. The orders received by TDA's clients for these two product groups were of the value of Rs. 260,000.

Sports goods, dolls, stainless steel cutlery and locks and padlocks were among the other products exhibited.

TDA is consulting CFTC and the International Trade Centre, Geneva for organising similar Buyer-Seller Meets in New York and Dallas in the USA in 1975-76, apart from organising a repeat show in London.

MORE FOREIGN EXCHANGE FROM BEDSHEETS

Recording over 65 per cent increase over the exports during 1972-73, Indian handloom and powerloom bedsheets fetched sizeable foreign exchange during the following year. From Rs. 81 million in 1972-73, the exports shot up to Rs. 135 million in 1973-74.

In the total export value during 1973-74, mill-made bed-sheets secured as much as Rs. 87.55 million accounting for the lion's share in the total exports during the year. These also registered more than 50 per cent increase over the exports during 1972-73 at Rs. 41.35 million. The spurt in overseas demand during 1973-74 was evident mainly because of increased offtake by the Federal Republic of Germany, USA, Sweden, Denmark, Canada, Finland and France. For example, Federal Republic of Germany improved its intake sharply to Rs. 22.85 million (1973-74) from only Rs. 6.30 million (1972-73), USA to Rs. 8 million from Rs. 4 million, Sweden to Rs. 10.40 million from Rs. 4.35 million, Denmark to Rs. 8.95 million from Rs. 3.64 million, Canada to Rs. 4.60 million from Rs. 0.25 million, Finland to Rs. 3.45 million from only Rs. 9300 and France Rs. 2.26 million from Rs. 56,000. Besides, UK, Norway, Italy, Nigeria, Kenya, Switzerland and Australia were the other significant markets in 1973-74.

Handloom bedsheets (excluding handloom hand-printed) constituted the next best variety active in export trade during the year under review. However, its export earning at Rs. 30.30 million was more or less at the export level during 1972-73 at Rs. 31.65 million. USA constituted the leading customer for this variety at Rs. 12.65 million as in the preceding year. However, as compared to its intake during 1972-73 at Rs. 15 40 million, its purchases during the year under review declined. UK, Federal Republic of Germany, Australia, Japan, Kenya, France, Denmark, New-zealand, Zambia and Canada were prominent among other buyers.

Besides these, powerloom bedsheets secured more at Rs. 9.35 million as against Rs. 3.20 million. The exports rose sharply because of increased purchases by Federal Republic of Germany, Sudan, UK, Italy, Denmark, Dubai, France and Sweden.

Handloom hand-printed bedsheets also earned more at Rs. 6.30 million against Rs. 4.25 million. USA, Australia, Japan, UK and Denmark were the significant markets. Apart from this, powerloom hand-printed bedsheet exports also improved to Rs. 1.60 million from their preceding year's leve of Rs. 0.60 million.

TRANSISTOR EXPORTS PICK UP

Transistor radio receiver sets of India are again picking up overseas demand. During 1973-74, these earned foreign exchange to the tune of Rs. 16.50 million (171,266 sets). In fact, with this export perfomance, the declining exports trend in this line has been arrested as the exports during the preceding year (1972-73) were barely Rs. 10 million from the peak achieved at Rs. 17.15 million in 1971-72. During 1970-71, the export value was of the order of nearly Rs. 8 million while in the year that preceded, it was only Rs. 2.65 million.

United Kingdom, the sophisticated economy, constituted the major market for Indian transistors, having bought 25,787 sets at a cost of Rs. 2.40 million. In fact, in 1972-73, its purchases were higher at Rs. 3 million (42,700 sets). Nigeria was the second major buyer at Rs. 2.20 million (20,544 sets) as against only Rs. 0.53 million (5004 sets). Besides these major markets, Dahomy Republic (Rs. 1.23 million), Ethiopia (Rs. 1.11 million), Czechoslovakia (Rs. 0.77 million), Federal Republic of Germany (Rs. 0.76 million), Cameroon (Rs. 0.65 million) and Switzerland (Rs. 0.51 million) were the other significant destinations during 1973-74. In 1972-73, besides United Kingdom, Sudan (Rs. 3 million), Bulgaria (Rs. 0.67 million), Ethiopia (Rs. 0.56 million), Nigeria (Rs. 0.53 million), Hong Kong (Rs. 0.33 million) and Czechoslovakia (Rs. 0.27 million) were the other significant markets.

During 1973-74, over 60 countries imported Indian transistors while in the preceding year 44 countries were the importing destinations.

UPTREND IN GEMS AND JEWELLERY EXPORTS

While during the full preceding year (1973-74) India's export trade in gems and jewellery secured increased foreign exchange earnings at Rs. 1050 50 million registering an increase of Rs. 331.60 million over the export performance during 1972-73 at Rs. 718.80 million, the export trend during April-July, 1974 indicated about 15 per cent rise, (Rs. 37.84 million) with exports reaching Rs. 290.88 million as against Rs. 253 million during April-July 1973.

In the total export earnings during April-July, 1974, diamonds, as usual, contributed maximum at Rs. 229.48 million as against Rs. 206.50 million (April-July 1973) registering about 11 per cent increase. Precious and semi-precious stones which stood as the next best foreign exchange earners during the period secured more at Rs. 50.26 million against Rs. 39.33 million and registered about 28 per cent increase. The export of gold jewellery also looked up to Rs. 3 million from Rs. 1.50 million and imitation jewellery to Rs. 5.76 million from Rs. 3.95 million. Pearls, non-gold jewellery and synthetic stones also improved their offtake during the period as compared to their export value in the corresponding period of 1973-74.

SUCCESS STORIES ON EXPORT FRONT

GLASS PLANT TO MALAYSIA

The glass factory set up in Kuala Lampur (Malaysia) as a joint venture by India has been successfully commissioned this month.

The Indian party, M/s. Hindustan Safety Glass Works Private Limited (2, St. George's Gate Road, Calcutta) have carried out the entire designing and fabrication of the plant with domestic know-how. Three technicians of the firm are in Malaysia to run the plant. The plant has been set up for the manufacture of flat and curved toughened safety glasses. The assignment will mean an earning of Rs. 1.2 million for India in foreign exchange. The estimated output of the plant is about Rs. 28000 sq. metres of the glass per annum.

The product range of the Calcutta firm includes "SAFEX" safety glasses "GOLDENFISH & TWINBIRD" mirrors and welding glasses. The

Correction : The figures of Indian exports to and imports from West Germany as also balance of trade during 1973-74 as given in the table on Page 16 of Vol. IV No. 45 of this Weekly dated November 9, 1974 may be read as : Rs. 818.30 million, Rs. 1958 million and Rs. 1140 million respectively instead of Rs. 318.30 million, Rs. 195.80 million and Rs. 114 million.

production turnover of the firm's two units at Calcutta and Allahabad is estimated at about 290,000 sq. metres per year. Besides catering to the home-demand, their products are exported to a number of countries including Iraq, Singapore, Indonesia, Malaysia, Sri Lanak, and even America and New Zealand.

India's export of glass and glassware amounted to Rs. 37.40 million in 1973-74 against Rs. 27.90 million in 1972-73 and Rs. 14.35 million in 1971-72. The export range includes a variety of glass, such as, window glass, plate glass, safety glass, toughened and laminated glass and glass-mirrors as also blanks for special lenses, and wire glass. Additionally, a variety of glassware is also active in export trade.

The production of glass and glassware in India improved to 300,000 tonnes valued at Rs. 500 million during 1972-73 from 290,000 tonnes at Rs. 400 million in 1971-72. The installed capacity of about 50 units in the line is placed at 462,500 tonnes.

INDIAN CYCLES IN OVERSEAS MARKETS

Indian cycles are sought by a number of overseas countries. Besides Iran, Nigeria, Indonesia, Bulgaria, Malaysia, Kenya, Bangladesh and Afghanistan, USA is also included among prominent destinations for the cycles. In 1973-74, the export value of complete bicycles totalled nearly Rs. 27 million while for the first six months of the current financial year (April-September 1974) the export value was Rs. 11.40 million.

Contributing to the export effort in the line, M/s. Hind Cycles Ltd. (Birlagram-Nagda) are reported to have booked export orders for 1,17,280 bicycles at a total value of about Rs. 20 million. The orders relate to supply of 60,000 bicycles to Indonesia at Rs. 8.5 million, 45,000 to U.S.A. at Rs. 8.6 million, 2000 to Port Harcourt at Rs. 0.55 million, 1000 to Lagos at about Rs. 0.30 million, 9000 to Iran at about Rs. 2.00 million and 280 to Dubai at a value of Rs. 75,000.

In fact, excepting the order from Port Harcourt, other orders have already been executed partly. The firm has already supplied 11,280 bicycles to Indonesia and another lot of 5000 to Iran. Actual exports against the U.S , order are to the extent of 3600 cycle. while those to Lagos total 750 cycles. About 200 cycles have also been exported against the order received from Dubai.

In its efforts to promote sales in overseas markets, the firm has appointed its agents in Nigeria as also in West Asian and South East Asian countries.

Against an installed capacity of about 4 million numbers per year in the organised sector, actual production of the bicycle industry in India was of the order of 2.7 million numbers in 1974. The capacity for complete bicycles in the small scale sector is placed at 0.50 million numbers (1974) while actual production in this sector is placed at 0.40 million numbers. The production of bicycle accessories and parts was of the order of Rs. 150 million in 1973 against Rs. 142 million in the preceding year. A comprehensive range of products, such as, bicycle chains, free-wheels, hubs, spokes, rims, mud-guards, saddles and chain-wheels are manufactured by the industry.

EXPORT ENDEAVOUR IN NON-TRADITIONAL GOODS

An export order for the supply of hydraulic pumps worth Rs. 2.26 million from Yugoslavia is reported to have been received by M/s. Usha Telehoist recently. They have also secured export orders for front-end valves and sleeves from UK and are stated to be negotiating for export of components and assemblies of tipping gears. Total sales of the company for the year ending June 1974 amounted to Rs. 17.80 million compared to Rs. 14.20 million in the preceding year.

The manufacturing range of the firm includes hydraulic pumps and valves as also hydraulic tipping gears

gears. Their annual capacity for hydraulic pumps and valves is rated at 20,000 and 10,000 units respectively. The firm is reported to have received permission to expand its capacity in regard to the two products to 80,000 and 60,000 numbers respectively. Similarly, it is understood that they have been allowed to expand capacity for hydraulic tipping gears from 3,000 to 5,000 units a year. The firm now proposes to undertake the manufacture of automatic chassis lubricating system and load luggers.

TOILETRIES AND COSMETICS IN EXPORT TRADE

From about Rs. 17 million in 1963-64, India's exports of glycerine, soaps, detergents, cosmetics, toiletries and processed talc rose over a period of ten years to more than Rs. 42 million in 1973-74, according to the Basic Chemicals, Pharmaceuticals and Cosmetics Export Promotion Council, Bombay.

Of the total export realisation of these products in 1973-74, one single firm in the line, M/s. Tata Oil Mills Co. Ltd. (24, Bruce Street, Fort, Bombay) have contributed nearly as much as Rs. 7 million. In the preceding year, their export earning for the products was even higher at Rs. 7.40 million against Rs. 4.35 million in 1971-72 and Rs. 1.65 million in 1970-71. In 1972-73, the firm received the "First Award" from the Basic Chemicals Pharmaceuticals and Cosmetics Export Promotion Council, Bombay, for the best export performance in the group of glycerine, soaps, detergents, cosmetics and toiletries. Earlier, in 1971-72 too, they received the same award. The firm's products are currently exported to over 30 countries, including developed ones like USA, UK and Japan.

Set up in 1917, the firm was initially engaged in crushing of copra and other oil-bearing seeds to recover oil. It has since diversified its product range to emerge, to-day, as one of the leading manufactures of washing and toilet soaps, synthetic detergents, toilet preparations (like hair oils, shampoo and eaude-cologne), glycerine, refined edible oils and vanaspati, protein and protein based foods and beverages, oil-cakes, deoiled meals, animal feeds and canned and bottled fruits and vegetables which are exported to a number of countries in the West and Far east.

Another firm, M/s. Lakme Ltd., Bombay, manufacturer of a variety of cosmetic products, have also succeeded over the last two years in promoting their exports to a level of Rs. 6 million per annum. The products of the firm are marketed to a number of countries, from oil rich Kuwait and other Gulf States to the U.S.S.R., Switzerland and other European countries. Their products have gained popularity in foreign markets on account of high quality and adherence to delivery schedule.

India's cosmetics industry has built up a sound base to undertake manufacture of a number of products in the line. In the organised sector, there are at present 46 units, engaged in the manufacture of soap. They have an installed capacity of 218,878 tonnes. Actual production improved to Rs. 0.29 million tonnes (1972) against Rs. 0.27 million tonnes in 1971. Among other products, production of talcum powder improved to 3897 tonnes (1972) from 3543 tonnes (1971), face powder to 54 tonnes from 53 tonnes, face cream to 946 tonnes from 846 tonnes, tooth powder to 857 tonnes from 815 tonnes and tooth paste 6,067 tonnes from 3543 tonnes.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

REVIEW OF SELECTED INDUSTRIES IN INDIA

Among India's basic industries, the output of coal reached a peak of 80.6 million tonnes in 1973 as compared to 77.5 million tonnes in 1972 and a previous record of 78.9 million tonnes in 1969. About 0.3 million tonnes of coal was exported during 1973. A crash programme drawn up by the Government of India involving an outlay of Rs. 10,000 million envisages coal output of 145 million tonnes (including 111 million tonnes of non-coking coal) by 1978-79. For this purpose, the Government entered into an agreement with the Soviet Union for giving assistance in deepening and intensive use of open cast mining to get extra coal output of 5 to 6 million tonnes from some of the existing mines and in gasification of coal for use as a substitute for petroleum products.

The output of iron ore stood at 35.2 million tonnes in 1973 which was marginally lower than that during the previous year. The share of Goa, Daman and Diu in the country's total output of iron ore was 34 per cent (12 million tonnes) in 1973. Iron ore exports in 1973 totalled 23.5 million tonnes as against 21.4 million tonnes in 1972. In terms of value the increase was from Rs. 1141 million to Rs. 1264 million. The share of Minerals and Metals Trading Corporation of India (MMTC) in the export trade is expected to go up from 10.6 million tonnes in 1972-73 to 13 million tonnes in 1973-74, 16.5 million tonnes in 1974-75 and further to 20.5 million tonnes by 1975-76.

The production of cement which was 15.8 million tonnes in 1972 declined marginally to 15 million tonnes in 1973. During 1971, the production amounted to 14.93 million tonnes while it was 13.96 million tonnes in 1970. Installed capacity in 1973 has been estimated at 19.8 million tonnes. For attaining higher capacity, the Government of India lifted the ban on large industrial houses expanding capacities in May 1973. Letters of intent were issued to large houses and other private parties for about 8 million tonnes. These projects are expected to be implemented within the next three years. Production of steel ingots totalled 6.6 million tonnes while that of finished steel 4.6 million tonnes during 1973-74. In the year before the output of steel ingots was 7 million tonnes and that of finished steel 5.5 million tonnes. The three plants of the Hindustan Steel Limited together showed an output decline of 6 per cent at 3.8 million tonnes in respect of steel ingots and about 8 per cent at 2.7 million tonnes in respect of saleable steel (1973-74). Bokaro steel plant which commenced partial production a year ago doubled its output of saleable pig iron from 310,000 tonnes in 1972-73 to 690,000 tonnes in 1973-74.

Imports of iron and steel in terms of quantity amounted to 0.8 million tonnes in 1973-74 as compared to 1.2 million tonnes in the preceding year. The decline was mainly due to the world—wide shortage of steel and higher international prices. An agreement for the supply of 50,000 tonnes of steel rolled products to India during 1973 was signed with U.S.S.R. in mid-November 1973.

The installed capacity of mini-steel plants has crossed 1.6 million tonnes and the actual production is about half of the installed capacity. Besides nearly 50 more units are expected to add another one million tonnes to the installed capacity.

Among heavy mechanical engineering industries, the production of automobiles was 97,600 numbers in 1973 as compared to 89,500 numbers in the previous year. The output of passenger cars improved to 42,200 numbers from 39,500 numbers. Production of commercial vehicles also improved from 37,400 numbers to 42,300 numbers. The output of jeeps rose from 12,600 numbers to 13,100 numbers in the respective years. There has been improvement in the production of light, medium and heavy structurals also. The quantum of production rose from 97,600 tonnes in 1971 to 114,600 tonnes in 1972 and 121,000 tonnes in 1973.

The value of diesel engines (stationary type) was higher by nearly 59 per cent at Rs. 530 million in 1973 as compared to Rs. 334 million in 1972. Production of railway wagons in terms of four-wheelers also improved from 10,200 numbers in 1972 to 11,900 numbers in 1973. The output of road rollers was more than doubled at 1483 numbers as against 657 numbers. Licences were given during 1973 to industrial units to manufacture 2200 road rollers per year and letters of intent were granted to four units for an additional capacity of 1700 road rollers every year. The value of machine tools produced increased to Rs. 660 million in 1973 from Rs. 620 million in 1972.

Among light mechanical engineering industries, the production of ball and roller bearings, bicycles, razor blades and crown corks improved while the output of typewriters, sewing machines, hurricane lanterns and the group of bolts and nuts declined. The production quantum of sewing machines in 1973 stood at 307,000 numbers while that of ball and roller bearings 23.5 million numbers, typewriters 31.6 million numbers, bicycles 2.54 million numbers (2.25 million numbers in 1972).

Among light electrical engineering industries, units manufacturing durable consumer goods like radio receivers, electric lamps, electric fans and drycells recorded decline in 1973 as compared to the preceding year. But the production of domestic refrigerators and storage batteries improved. In 1973, the output of electric lamps was about 137 million numbers, (including GLS and fluorescent lamps), electric fans 2.26 million numbers, radio receivers 1.59 million numbers, storage batteries 1.25 million numbers and dry cells 602 million numbers. The output of domestic refrigerators increased from 89,300 numbers in 1972 to 121,600 numbers in 1973.

The production of power transformers and electric motors improved substantially. The quantity of power transformers produced was of the order of 9.29 million kva in 1972 which improved to 11.8 million kva in the following year. Likewise, the output of electric motors which was 2.56 million hp improved to nearly 3 million hp in the subsequent year.

In the metallurgical sector, production of copper rose from 10,300 tonnes in 1972 to 12,000 tonnes in 1973. But in these years the production of aluminium came down from 179,100 tonnes to 154,300 tonnes and that of lead from 2,700 tonnes to 2,600 tonnes, The production of aluminium sheets and circles went up from 49,900 tonnes to 53,400 tonnes.

In the intermediate goods sector, the production of jute goods suffered a setback. It was 1.04 million tonnes in 1973 as compred to 1.10 million tonnes in 1972. The exports of jute manufactures also declined from 625,000 tonnes in 1972 to 580,000 tonnes in 1973. However, a steep rise in the prices of crude oil and acute shortage of petroleum products afforded a competitive edge to jute goods over synthetics. With a view to ensure a regular supply of raw jute to the manufacturing industry, a scheme was evolved for building a buffer stock of about one million bales of raw jute both from domestic and imported sources. Also the export duty on sacking was abolished and on hessian brought down. However, in order to divert a part of increased earnings arising out of sharp rise in the jute goods prices, the duty was increased on primary and secondary carpet backing in March 1974. On hessian also the duty was increased while a fresh impost was imposed on sackings (cloth bags). The Government of India accorded recognition to the "Jute international", a body to be set up under the United Nation Developmental Programme (UNDP). The body is to ensure multilateral cooperation among nations to safeguard the interest of jute in the world markets.

The output of automobile tyres and tubes was 4.3 million and 4.17 million numbers respectively in 1973. The capacity utilisation ratio for automobile tyres was of the order of 112 per cent in 1973. The production of cycle tyres and tubes was 18.75 million and 12.54 million numbers respectively. Capacity utilisation ratios in these industries were 57 per cent and 43 per cent respectively (1973). The production of rubber footwear was 38.8 million pairs (1973). As regards the availablity of raw material to the rubber industry, the production of natural rubber increased from 109,000 tonnes to 123,000 while that of synthetic rubber declined from 28,000 tonnes to 21,000 tonnes, mainly on account of acute shortage of petroleum.

The output of chemicals and chemical products suffered a mild setback in 1973 after a sizeable improvement that it witnessed in 1972. In 1973, production of soda ash was of the order of 470,000 tonnes while its installed capacity was 508,000 tonnes. The output of caustic soda was 410,000 tonnes and its installed capacity was 440,000 tonnes. Large industrial houses and foreign majority companies are permitted to put up caustic soda units. The output of paints and varnishes was of the order of 73,000 tonnes in 1973. In the same year, the production of soap was 210,000 tonnes. The production of chemical fertilisers (nitrogenous and phosphatic) rose to 1.08 million tonnes and 130,000 tonnes respectively in 1973 against 1.05 million tonnes and 120,000 tonnes in 1972. Installed capacity for nitrogenous fertilizers was 1.7 million tonnes while that for phosphatic fertilizers was 500,000 tonnes (1973).

The petro-chemical industries revealed improvement in 1973. Petroleum based organic heavy chemicals like acetone, benezene, acytylene and methanol showed improved output. The total output of heavy organic chemicals during 1973 rose to 400,000 tonnes as compared to 360,000 tonnes in 1972. Likewise, the output of thermosets and thermo plastics also rose from 115,000 tonnes in 1972 to 122,000 tonnes in 1973.

The production of cotton textiles was lower at 7808 million metres in 1973 than 8028 million metres in 1972. Yarn production was 987 million kg. in 1973 which was slightly more than that of 1972. Cloth production in the mill sector was 4154 million metres in 1973 as against 4244 million metres in 1972. In the licensed sector, cloth production was 3654 million metres in 1972 as against 3784 million metres in the preceding year.

Production of cloth by the Government managed mills during 1973 stood at 806 million metres (596 million metres in 1972).

The output of paper and paper board (excluding newsprint) was 7700,000 tonnes in 1973. The installed capacity is of the order of 900,000 tonnes and the capacity utilisation ratio is about 87 per cent. Production of rayon grade pulp aggregated about 80,000 tonnes in 1973 and that of paper grade pulp was 60,923 tonnes. The output of newsprint at Nepa, the only newsprint mill in the public sector, reached a level of 43,847 tonnes in 1973 as compared to 42,048 tonnes in 1972. NEPA's expansion programme to raise its rated capacity from 40,000 tonnes to 75,000 tonnes is expected to be completed by the end of 1974. The production, however, might fall far short of the estimated demand at 230,000 tonnes and therefore, the Government of India made efforts to step up imports from Canada and Scandinavian countries. To raise domestic production of newsprint, the Government also decided to establish a factory in Kerala with a capacity of 80,000 tonnes per year, to be set up by the Hindustan Paper Corporation. Three more schemes have been approved for the establishment of new units for manufacture of newsprint covering a total capacity of 165,500 tonnes. These newsprint mills would be set up in Himachal Pradesh, Uttar Pradesh and Maharashtra.

EXTERNAL ASSISTANCE TO INDIA

A REVIEW

Having declined in 1972-73 to the lowest level for ten years, India's net external assistance receipts improved by 65 per cent during 1973-74 but still amounted to only Rs. 2080 milllion. This was so because of a sizeable proportion of the aid inflows absorbed by debt service payments.

The aid authorisations during 1973-74, comprising loans and grants amounted to Rs. 10,210 million. The component of loans in the total authorisation during the year was of the order of Rs. 9870 million while that of grants stood at Rs. 340 million.

The cumulative total of the aid authorised during 1969-70 and 1973-74 totalled Rs. 38,490 million. This figure comprised loans to the tune of Rs. 36,200 million, grants Rs. 1970 million and PL 480 aid Rs. 320 million.

Actual utilisation of external assistance during 1973-74 was only Rs. 6920 million (Rs. 6760 million worth of loans and Rs. 160 million worth of grants). The cumulative utilisation of external aid during the five fiscal years ended 1973-74 was of the order of Rs. 37,350 million (Rs. 34,220 million worth of loans, Rs. 1580 million worth of grants and Rs. 1550 million worth of PL 480 aid).

The IDA (International Development Association) and the IBRD (International Bank of Reconstruction and Development) which provided 46 per cent for the total authorisations during 1973-74 continued the emphasis on project assistance. The share of project assistance in the total loan authorisations rose to 63 per cent during 1973-74 from 47 per cent in the preceding year.

Next to IBRD/IDA authorisations, the authorisation received from United Kingdom was the highest during 1973-74 (Rs. 1570 million). Of the UK's authorisation in the year, project assistance was of the order of Rs. 790 million; non-project assistance was worth Rs. 640 million and debt-refinancing was worth Rs. 140 million. The authorisation was the next best from Czechoslovakia (Rs. 800 million), followed by Federal Republic of Germany at Rs. 590 million. Next in importance the donor countries were Canada (Rs. 490 million), France (Rs. 430 million), Japan (Rs. 380 million), Netherlands (Rs. 230 million), USA (Rs. 220 million), Switzerland (Rs. 160 million) and Italy (Rs. 130 million).

Debt-relief authorised during 1973-74 amounted to Rs. 1180 million which was 12 per cent higher than in the preceding year. As in the past, the bulk of the relief (Rs. 780 million) was provided by way of re-financing credits.

At the beginning of the financial year 1973-74, the aid available in the pipeline amounted to Rs. 15,830 million of which Rs. 12,490 million or 79 per cent comprised project assistance and the balance non-project assistance including grants.

Debt service payments totalled Rs. 4840 million during 1973-74. They continued to absorb a substantial proportion of the gross aid inflow. Thanks to the continued growth in exports, debt service payments as a proportion of value of exports also declined over the year from 25 per cent to 20 per cent.

The Aid India Consortium which met in June 1974 noted the "unusually difficult economic situation that India faced as a result of high prices of oil and other essential commodities and a serious deterioration in the terms of trade. It was agreed that substantial new commitments, mostly in a fast-disbursable form, were required to maintain imports on a minimum adequate level and to avoid serious cutback in development. The members of the Consortium agreed, therefore, that commitments of non-project assistance including free foreign exchange predominantly in the form of debt-relief, by about $ 800 million and of project assistance of about $ 600 million would be desirable for 1974-75. At this level, the Consortium aid would be about US $ 300 million more than that in 1973-74. Indications given at the meeting amounted to about $ 1.3 billion of which the IDA and IBRD are expected to provide $ 650 million. Indications for non-project aid totalled $ 510 million and those for debt relief $ 184 million, the remainder being accounted for by project aid, according to the Report on Currency and Finance (1973-74) of the Reserve Bank of India.

Besides being a recipient of external aid, India is also an aid donor to other developing countries. Bangladesh has been the largest recipient. The Indian assistance authorised for Bangladesh up to March 1973 totalled Rs. 1677 million while during 1973-74 it was of the order of Rs. 421 million. The total external assistance extended by India up to March 1973 was worth Rs. 3690 million, of which authorisation during 1973-74 alone was Rs. 664 million. In 1973-74, Nepal and Bhutan were the other areas that received assistance from India besides Bangladesh. Earlier, Burma, Sri Lanka, Indonesia, Mauritius and Tanzania were also included in the list of the recipient countries that were benefitted from Indian assistance.

ON INDIA'S INTERNATIONAL AIR-PORTS

The four International airports in India, at Delhi, Bombay, Calcutta and Madras, today serve 5.53 million passengers every year. A total of 130,000 aircraft movements are handled by the four airports annualy at present.

It is anticipated that by 1980 there will be 18 milllon passengers and 240,000 aircraft movements at the four international airports. To meet this increase, the International Airports Authority of India (IAAI) has conducted studies for providing better passenger and aircraft handling facilities for the future.

The aircraft of the future will need increasingly sophisticated electrical and mechanical equipment at airports for several operations. The Authority plans to instal a close circuit television system for monitoring movements of aircraft on the ground. Surface detection radar to help apron controller to guide aircraft to the parking bays is also planned to be installed in the near future. The most up-to-date fire fighting equipment including crash tenders and rescue vans are sought to replace the present equipment.

At the Delhi Airport, a new international terminal is being planned to be set up during the next five years with a handling capacity of 2 million passengers a year. A new international terminal building in the form of an arc capable of handling seven million passengers every year is a target for Bombay Airport. Already, a model international passenger terminal with ample space to serve the present and anticipated traffic for the next few years, is in existence at Calcutta. The Madras Airport terminal complex is being expanded to meet the requirements of passenger growth and increased aircraft movements projected for the next five years.

The International Airport Authority of India, a public sector undertaking is responsible to improve and develop airport infrastructure in the country.

AUTOMATIC BATTERY CHARGER

An automatic battery charger has been developed at the National Aeronautical Laboratory, (NAL), Bangalore for charging lead acid batteries. It has been in use for over two years and found to be reliable.

The charger may be left connected to the battery without attention for any length of time with no fear of overcharging as the charger is capable of automatically reducing the charging current as the battery gets charged up. Accidental shorting of the output terminals cannot damage the charger as there is inherent protection because of automatic tapering off of the current. Buckling of the plates is prevented, extending the battery life.

The charger can be made for 6 V to 36 V batteries and with minor modifications for batteries over 46 V. The charging current depends on the state of discharge of the battery, providing full charging current when the battery is discharged and trickle charging when the battery is fully charged, the maximum charging current being adjustable according to the battery rating.

The charger uses the principle of phase control using a silicon controlled rectifier and a UJT for sensing battery voltage and comparing it with a reference voltage producing trigger pulses early in the half cycle when the battery is fully discharged and late in the half cycle when it is charged. An automatic charger of this type which provides charging current proportional to the state of discharge of the battery according to the AH law has not so far been made in the country.

The cost of production of the NAL charge for a 12 V battery with an initial charging rate of 10 A is about Rs. 1000. Ordinary Selenium or silicon rectifier units with manual adjustment for charging current (6 A max.) costs between Rs. 1000 and Rs. 2000 in the market.

In the context of energy shortage, the battery charge is a handy equipment for keeping the batteries fully charged, with minimum power consumption from the mains in as short a time as possible. The charger is useful to the research worker who needs un-interrupted power supply for days together, to the automobile owner who uses his vehicle only rarely because of the exorbitant cost of petrol, to any industry which uses batteries.

REVIEW OF INDIA'S IMPORT TRADE

India's import bill amounted to Rs. 18,307.60 million in the first half of 1974-75 (April-December 1974) as compared to Rs. 11,117.30 million in the corresponding period of 1973-74. During 1973-74, the import trade totalled Rs. 29,210 million while it was of the order of Rs. 18,675 million in 1972-73. The rise in imports by about Rs. 10,540 million in 1973-74 was 56 per cent more than in 1972-73 and was influenced mainly by sharp rise in the international prices of a number of commodities that figured prominently in the import bill. During the last five years, the level of imports was the lowest in 1969-70 at Rs. 15,830 million. Since then, the value of imports gradually rose to Rs. 16,342 million in 1970-71, Rs. 18,245 million in 1971-72, Rs. 18,675 million in 1972-73 and Rs. 29,210 million in 1973-74.

A commoditywise study of the import trade during 1973-74 would indicate that the imports of four commodity groups, mainly accounted for the increase in the overall total bill. These commodity groups were foodgrains, petroleum and petroleum products, machinery and fertilizers. The largest increase in import was in respect of foodgrains which went up from Rs. 810 million in 1972-73 to Rs. 4730 million in 1973-74. The share of food imports to total imports rose to the extent of 15 per cent in 1973-74 as against its share of 4 to 5 per cent in 1972-73. The import of cereals and cereal preparations was valued at Rs. 4730 million in 1973-74 as compared to Rs. 810 million in the preceding year. Wheat imports alone increased from 500,000 tonnes (Rs. 482 million) in 1972-73 to 3.07 million tonnes (Rs. 3461 million) in 1973-74. Wheat imports proved to be costlier by 16.5 per cent in 1973-74 over the preceding year. Out of total wheat imports worth Rs. 3460 million, imports from U.S.A. were valued at Rs. 1950 million, from USSR, Rs. 1090 million and from Canada Rs. 420 million.

The second commodity group whose imports value shot up in 1973-74 as compared to the previous year was that of crude petroleum and petroleum products. The import bill on account of these products increased from Rs. 2040 million in 1972-73 to Rs. 5600 million in 1973-74, showing an increase of Rs. 3560 million or 174 per cent. Petroleum crude and partly refined alone increased from Rs. 1450 million to Rs. 4170 million. The escalation in oil prices was mainly responsible for the sharp rise in the import bill as c.i.f. unit value of imports for crude sharply rose to an average of about Rs. 300 per tonne during 1973-74 as compared to about Rs. 121 a tonne in 1972-73. In terms of quantity, the import of crude petroleum for 1973-74 amounting to 13.7 million tonnes was only 15 to 16 per cent higher as against 12 million tonnes imported in the preceding year.

The import of machinery group - both electric and non-electric - went up by about 25 per cent from Rs. 4320 million in 1972-73 to Rs. 5410 million in 1973-74. The increase in the import bill of machinery is obviously to sustain the tempo of industrial development in the economy. Imports of machinery (other than electric) amounting to Rs. 4160 million in 1973-74 revealed a rise of Rs. 1180 million or 40 per cent over 1972-73. In the non-electric group, imports in respect of power generating machinery, office machines, machinery for specipal industries and machinery and appliances registered a rise while those in the case of metal working machinery were lower. The import value of electrical machinery, apparatus and appliances amounting to Rs. 1240 million registered a decline of Rs. 100 million or 8 per cent. There was a decrease in the imports of electrical power machinery and swtichgear and equipment for distributing electricity but a slight increase was noticed in the import of telecommunication and apparatus and other electrical machinery and apparatus. The increase in the output of the electrical machinery and apparatus during 1973 partly helped in the reduction of imports.

Fertilizers constituted yet another group whose import value increased during 1973-74 as compared to the previous year. The tight international supply position created difficulties in importing sufficient quantities of fertilisers even at higher prices. There was, however, a further increase in the imports of fertilizers - both crude and manufactured - reflecting growing requirements of the economy. The import of manufactured fertilizers increased to over 2 million tonnes valued at Rs. 1620 million in 1973-74 from about 1.8 million tonnes valued at Rs. 960 million in 1972-73. While the quantity imported increased by about 16 per cent, the increase in value was of the order of 69 per cent, thus, revealing an impact of price rise. The increase in the unit value of imports of manufactured fertilizers was about 45 per cent at Rs. 791 per tonne. U.S.A., German Federal Republic, Japan and Netherlands were the main suppliers. In respect of crude fertilizers (mainly rock phosphate), the value of imports doubled to Rs. 210 million while the quantity imported increased by only 17 per cent from 780,000 tonnes in 1972-73 to 910,000 tonnes in 1973-74.

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There were also increases in the value of imports of iron and steel, non-ferrous metals, chemicals and vegetable oils. Imports of iron and steel declined by about 17 per cent in terms of quantity during 1973-74. But owing to increase in world prices, import value increased by about 7.4 per cent from Rs. 2260 million in 1972-73 to Rs. 2430 million in 1973-74. Imports of all the major categories of iron and steel, excepting ingots and other primary forms recorded value increases. As for non-ferrous metals, international prices witnessed larger increase than that of iron and steel. As a result, non-ferrous metal imports, though lower in terms of quantity, showed increase in terms of value. From an aggregate value of Rs. 1090 million in 1972-73, these imports rose to about Rs. 1400 million in the year that followed. In the case of copper which constitutes the largest item in the group, the imports increased by about 36 per cent, from Rs. 519 million to Rs. 709 million. During the same period, zinc imports were higher by about 21 per cent, from Rs. 229 million in 1972-73 to Rs. 277 million in 1973-74.

Becuase of comfortable supplies of raw cotton at home due to good output, its imports during the year 1973-74 were considerably lower. They declined to 57,000 tonnes valued at Rs. 521 million from 113,000 tonnes valued at Rs. 909 million. The increase in domestic output of cotton was from 5.5 million bales in 1972-73 to 6.5 million bales in 1973-74.

Imports of transport equipment also declined during 1973-74 to Rs. 880 million from Rs. 1000 million in 1972-73. The items whose imports increased were parts of railway locomotives and rolling stocks as also ships and boats. On the other hand, there was a marked decline in the import of aircraft and road motor vehicles.

Directionwise, India's import trade in 1973-74 increased from all the regions and the rise was substantial in respect of imports from America, Asia and East Europe. Imports from the American continent rose from Rs. 3660 million in 1972-73 to Rs. 6650 million in 1973-74 or by 82 per cent more. From U.S.A. imports more than doubled to Rs. 4830 million, mainly on account of larger imports of wheat unmilled cereals, machinery and fertilizers. Imports from ESCAP (ECAFE) countries increased by 67 percent to Rs. 6690 million. In this region, Iran and Japan were India's principal sources of supply. The value of imports from Iran increased by 119 per cent to Rs. 2680 million, mainly because of hike in oil prices. Iran also supplied larger quantities of sulphur. Imports from Japan increased due to larger intake of iron and steel, machinery and transport equipment, chemicals and manufactured fertilizers. Imports from East European countries rose by 70 percent to Rs. 3930 million mainly on account of higher imports of iron and steel, machinery and transport equipment. Imports from West Europe recorded moderate rise of nearly 20 per cent. The European Common Market countries accounted for the bulk of these imports which amounted to Rs. 6830 million in 1973-74, showing a rise of 18.5 per cent over the preceding year. Larger supplies of machinery, iron and steel, transport equipment, chemicals and precious and semi-precious stones from these countries were responsible for the rise in imports. Imports from the African region were marginally higher at Rs. 1670 million in 1973-74. Imports from the principal trading partners in this region, particularly, Sudan was much reduced. Imports of cotton from Sudan were considerably curtailed due to comfortable supplies at home. Imports from Arab Republic of Egypt were somewhat lower while those from Kenya and Zambia recorded improvement mainly due to larger arrivals of copper. □

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